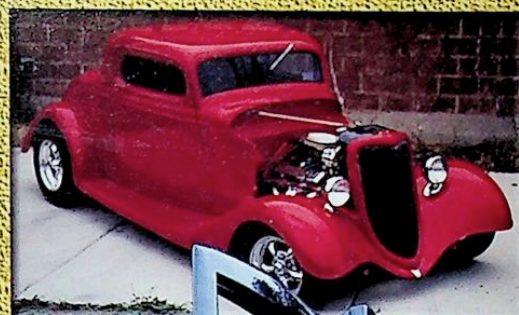


**GIANT** 2003 Kit Car Buyer's Guide  
**225** Companies and **380** Cars

# KIT CAR

THE CAR BUILDER'S AUTHORITY



September 2002

## Euro-Works'

## Non-Stretch Mirage X Lambo

- Four-Seater Rodster
- Mercedes 500K
- Guide to Gauges
- Brakes Roundup



Terrific  
289 FIA



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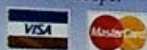
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SEPTEMBER 2002

VOLUME 21, NUMBER 5

## SHOWCASE

### Family Rod

The Caroselli Rodster is unique by itself, but this one was expanded to become a four-seater that can accommodate an average family

### Terrific 289

This racing Snake is an uncommon compromise between the 427 SC and an all-around car

### Personality-Plus

Retired electrical engineer Ed Horton gets all the character he needs from his Heritage Mercedes

### Non-Stretch Lambo

The Euro-Works Mirage X mounts on a Fiero with no chassis modifications

## FEATURES

**Kit Car's 2003 Kit and Component Car Buyer's Guide**  
The most comprehensive kit car manufacturer's directory ever—225 companies and 380 cars

**Fun Under The Sun and Clouds**  
The 23rd Annual AHA car show at Knott's Berry Farm was a two-day homage to great cars and fun people

### Bonus Catalog Section

Complete and outfit your car from the convenience of home

## TECH

### Fiero Stretch

Lengthen a Fiero donor like a pro

### Gauging Protection

New dash readouts immediately let you know what's going on inside your engine

### Looks Can Kill

The keys to a good brake system are in safety, not style

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## ON THE COVER:

Crisscrossing America, Kit Car Editor Mike Blake photographed all three images on this month's cover. The lead picture shows Archie Leopardi's Euro-Works Mirage X Lamborghini replica, which is on a non-stretched Fiero chassis. It was captured by Blake at the '02 Carlisle Kit Car Nationals in Pennsylvania. Scott Richey's Contemporary Cobra 289 FIA (below left) was shot by Blake at last year's Run And Gun event in Madison, Illinois, and the Antique & Collectible Autos '34 Ford (above right), owned by Tom Wrazen, was lensed by Blake in Buffalo, New York.

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SEPTEMBER 2002 KIT CAR 3



# DRIVER'S SIDE

by Mike Blake

## CAR GUY IN REAL LIFE

How many times have you been driving your kit, and you've asked, "Is that a real car?" Most kit replicars are real, all right, and built better than the originals. Try driving an ample digit in a truck in a toy car.

How many times has being a car guy paid off in real life? For me, recently, it paid off twice.

I live in cold country...OH, so this is the September issue, and fall colors abound where I make my home, with no snow in sight for another month or so, but in this God's country...the country up along Lake Superior, where the winter brings an average of 240 inches of snow to my village. Two years ago, we hit 300 inches of worse weather. Up here, a snow blower, a snowmobile, and a four-wheel-drive pickup truck with a snowplow blade attached are as mandatory as cable television, cell phones, and a fireplace.

The two payoffs came on non-kit vehicles.

The first one occurred when my 15-year-old 8.5hp Ariens snow blower threw its pushrods. Not content with replacing what I had, I utilized the Tim Allen "More Power" car-guy approach. I installed a 10hp Tecumseh engine, and when I found that the snow wasn't being thrown high enough and far enough, I cut off about 3 inches of the snow sleeve and rewelded it on. Now this baby throws snow as high and far as I like. It is a car guy's device now.

The second circumstance deals with my truck. To move snow on my property, I bought an '89 Ford F-150 with a snowplow blade on it. It will make a great donor car someday. I got a good deal on it, but everything has broken down, been fixed, or is about to be replaced. Sound familiar? Well, I discovered that operating my plow blade drains the battery considerably. The option, a car guy's option, is to add a second battery to give a greater power reserve. Does that sound familiar? It's great, being a car guy. We never would have thought of it otherwise. Now, if only someone comes out with a Cobra or GT40 kit to rebody old snowmobile chassis; then I'll be a happy snow man.

Write in and tell me about your car-guy experiences in real life, and we'll print the best of the best.

4 KIT CAR SEPTEMBER 2002

## NEW BUSINESS

Kit car business was affected by the tragedy of September 11, 2001, and most manufacturers received no calls for about two to three weeks, but with Christmas approaching and a long winter on its way, most companies have reported that sales have picked up where they left off...a bull market.

We all know Detroit must think kit car business is good, because Ford keeps coming out with replicas of our replicas. First, it was the nostalgic return of the Thunderbird, then the GT40, and soon, the Ford Cobra concept car.

The GT40 was first thought to sport an \$80,000 price tag, then that became a hefty \$100,000 price. Now, pricing has gone through the roof. Rumors now have it priced at up to \$150k...so where does that leave the Ford factory Cobra for 2006?

If it is in the \$100k range or higher, then kit cars will survive the battle and possibly do even better than before. Ford will have other problems getting the GT40 and Cobra to pass emissions standards and crash tests, so they may wind up with cars that are not replicas of their classics. Will they make GT40 Mark IVs? Topless 40s? Will these cars bear any resemblance to the original 40s as our kits do? Only time will tell.

However, to guard against the Detroit invasion of replicas, new cars are making their way into the kit car market.

Two years ago, Superformance added a Daytona-esque coupe and a Lotus-inspired S1 to its arsenal. Factory Five went with a Daytona-like coupe and a Spideracer, and is close to coming out with a mid-engine vehicle. The Lister-esque Dragon is the new lizard on the block, and Shell Valley, in concert with Team-C-Racing.com, has developed a Chevrolet and a Jaguar Sanderia Tipo 1000 racer to complement its Cobras.

For other new designs and variations on the old, check out this issue's Kit and Component Car Buyer's Guide, the most comprehensive kit car buyer's directory ever with 225 companies and 380 cars listed.

With new companies and new designs springing up all the time, the industry looks very healthy...and looks to remain strong for sometime to come.

Most kit replicars are real, all right, and built better than the originals.

# KIT CAR

THE CAR BUILDER'S AUTHORITY

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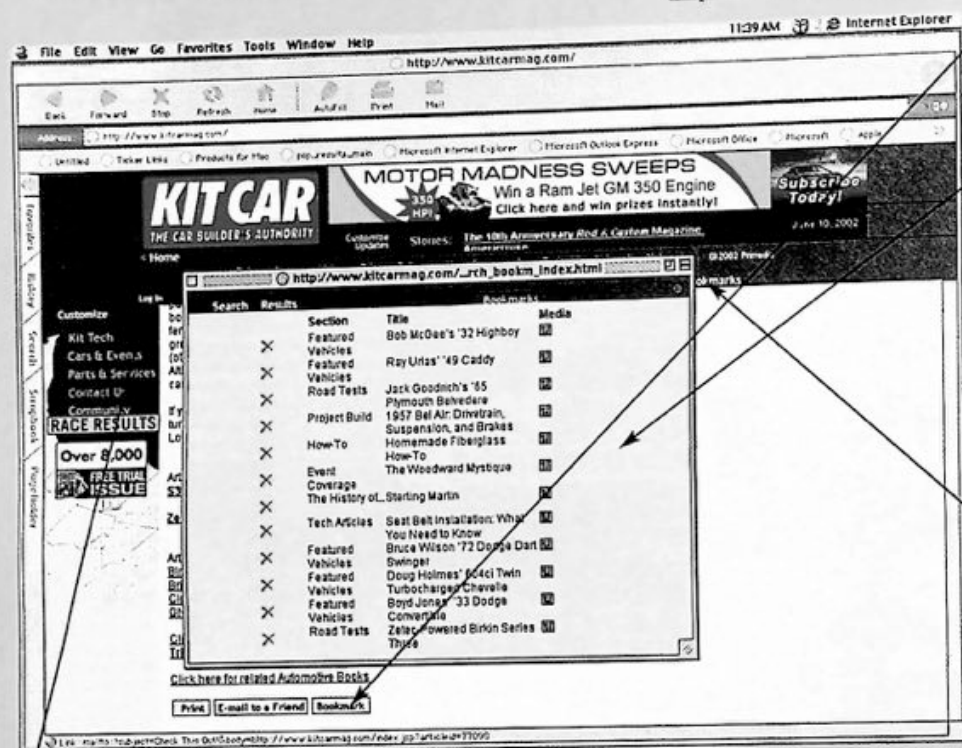


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Starting August 6, 2002, preview these stories from our upcoming issue by loading this URL into your browser's address window:

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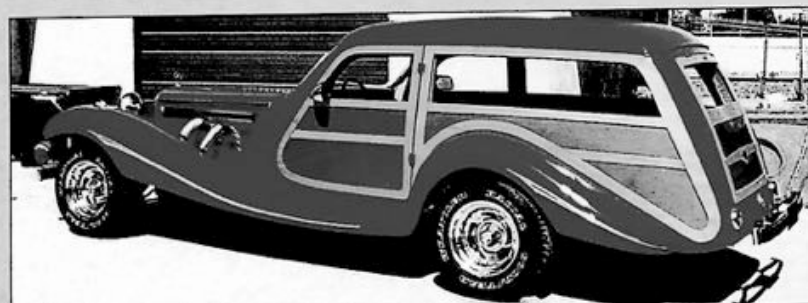


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Kit Car magazine readers show off their projects.



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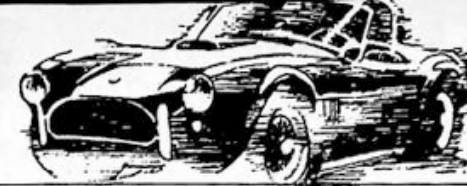
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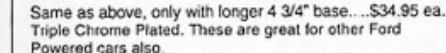
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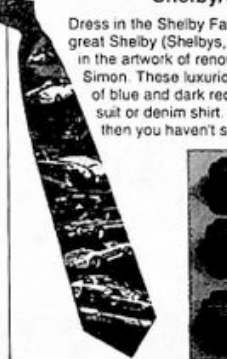
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Shipping fee: \$4.00 for one or both.

**Cobra Aluminum Valve Covers**  
Small block 260-289-302-351W 1966-70 polished fins with Cobra Powered by Ford, black crinkle finish with solid letters .....\$109.95 pr  
1965-66 polished fins with Cobra Powered by Ford open letters, natural finish.....\$199.95 pr.

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# MAILBOX

kitcar@primediagmmg.com

## ELECTRIC DINO

I have been looking for a Ferrari replica like the old Magnum. While checking on it, I found a car called the Kaylor Dino GT. Have you heard of it?

Larry Jozz  
Via the Internet

Larry, Kaylor Energy Products began producing kit cars as an extension of its electric-engine business. It produced VW-based kit cars from the early '80s to the late '90s out of Redwood City, California. It built the Invader GTE and a Ferrari Dino 246 replica that is strikingly similar to the Magnum. I have not heard anything about the company recently, and it may no longer be producing the kit. The interesting thing about its cars is that they are most often powered by a 30hp electric motor in concert with a small gas or diesel engine, and often use only an electric motor. I have not seen any of them recently and I don't know of any for sale, but you can contact the Northern California Kit Car Club (916/399-9393)...maybe the club members have seen some around.

## RUN AND GUN COVERAGE

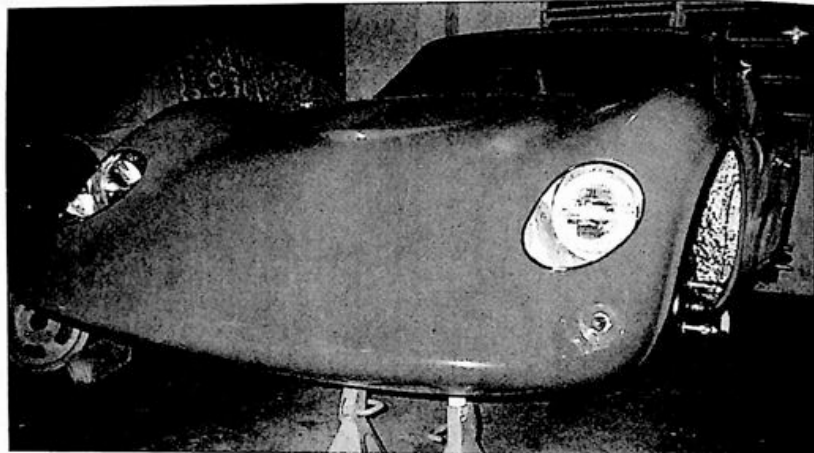
In your Run And Gun coverage in the March '02 and May '02 issues of *Kit Car*, there wasn't a complete listing of all the competitors ranked by time—fastest to slowest in the three events. How come you don't show every car's times in all the events?

Cork Farkas  
Via the Internet

We hope the Run And Gun coverage is for all of our readers, Cork, and not just the entrants. With that in mind, we limit the amount of space we devote to coverage and spread it over two issues—one edition for the overall event, road course, and autocross, and one issue to the dragstrip and King of the Hill competition. We do this to build excitement in the event and in the enjoyment of racing and showing off kit cars. There is not enough room in the magazine to list 60-100 cars and their times in all three events. Besides, best-to-worst lists are all well and good for the winners, but often embarrass those who do not fare as well. The event is supposed to be fun competition, and we don't want to make anyone feel bad if we can help it. For those reasons, we only publish the top times. What we try to do is let the public and the entrants know who did the best, what fun and

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excitement the event displayed, and how these cars were set up and fine-tuned. Then, we try to get in pictures of as many different cars as possible. Our racers have told us that seeing their cars in the magazine is worth more to them than anything else we do to cover the race. Our non-competing readers have told us that they like seeing the coverage but really don't care who finishes 23rd or 34th or 57th. For the record, Cork Farkas' car, a '67 Mustang GT350 replica from The Chassis Shop, finished Fifth in his class (Pro Small-Block) in the autocross and dragstrip and Fourth on the road course. His driving partner and co-owner, John Gyann, finished Third in the 'cross and quarter-mile and Second on the road course.



## PUMA HELP

I am in Puerto Rico, and I need a few parts for a late-'70s Puma. Can anyone out there supply me with a windshield for the front frame—it looks like a '60s Corvette or Bradley GT kit; chrome-rimmed front headlights and frame; and front parking lights no larger than 2 inches around, resembling Cobra headlights? That's all I need to finish my project.

Hiram Perez  
Morovis, Puerto Rico

If anyone out there can help Hiram, he can be reached at phone number 011/787-939-862-0894, or by mailing him at Calle Elias Russe, 159 Barrio Torrecillas, Morovis, Puerto Rico 00687.

## INSTANT PUMA HELP

In regard to the letter from Mark Oxenreiter ("Pondering Puma") in the May '02 Mailbox, I suggest you get in

touch with Bill Jackameit (wjackameit@pvcc.cc.va.us), who is our Puma Club leader. He can also be reached at 972 Kelsey Dr., Charlottesville, VA 22903.

We usually have one or two Pumas at the NCKCC concourse. Also, Claude's Buggies was an importer during the late '70s and '80s.

No Name Given  
Via the Internet

Thanks for the tip. I wish we knew your name so we could thank you.

## ORIGINAL-DESIGN PROJECT

I am in the final month or so of completing a kit-style car that has taken me four years. The car is an original design that I call the "Carava." The fiberglass body and frame were

built by Bruce Anderson. It also features a rear-mounted Cadillac Northstar, headlights and turn signals mounted in the rearview mirrors, and a very upscale and innovative interior. This may be the only non-factory car that has an operational OBD II OEM Cadillac system. That is, it has fully automatic air-conditioning, anti-theft, oil-change reminder, and many other extras. What are my chances of having *Kit Car* do a feature on my project?

Joe Gasper  
Via the Internet (Florida)

The project sounds exciting, Joe, but I couldn't even think about a feature unless the public could buy or produce the same-style body shell you have and the same frame (or an alternative). Our readers like to be able to buy and/or construct anything they read about in the magazine. Once the car is finished, if it is also available to the public in kit or component form, send me out a few

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photos, after a year, brightly lit and well-focused photos or slides with an uncluttered background, and I'll take a look at it. If you have completed any portions of the buildup that are generic enough to be employed by other readers on their projects, write us again, and we can discuss the potential of that scenario. Good luck on your project.

## BUGATTI SUPERCAR

I am trying to find out if anyone out there manufactures a kit for the Bugatti EB 110.

Joel Alexander  
Via the Internet

Joel, the Bugatti is a wonderful car; you certainly didn't go after the most popular Bugatti, the T35, preferring to ask about the supercar EB110. But at this point, to my knowledge, no one in the United States produces a kit for it. The last company I knew of that made the EB110 was Roman Designs of Ontario, California, which also made a Lambo Diablo. It began business in 1996, but I believe it stopped producing both cars several years ago.

## STARS AND STRIPES

I loved the concept of your feature on Stars and Stripes cars in the July issue ("American Spirit"). I have a kit car that I painted with stars and stripes in memory of 9/11, but I didn't get you the pictures in time for that issue. How do I get this patriotic car in *Kit Car*?

Dave Nelson  
Via the Internet

Dave, you can get your car in *Kit Car* magazine the same way any deserving car is put under consideration for publication. First, I need a dynamic, crisp, clear, in-focus, well-lit picture that shows off your car against an uncluttered background—the picture is 99 percent of the deal. I would rather have 35mm slides or color prints, but if you must send me a digital image, then it must be a very high-resolution image (a minimum of 1,800 pixels across, or a 6 megabyte file) saved as an uncompressed JPEG. A 600-dpi file saved at at least 4x5 inches would also work. Then I need a complete tech workup: who made the body panels or shell, material of the shell, manufacturer of the chassis, engine (with horsepower figures), carburetor, aspiration, heads, headers, ignition, transmission, gauges, steering wheel, wheels, tires, suspension, transmission, paint manufacturer and colors, and any modifications or extras you have included. Contact me at mikeb@mcmullenargus.com, and we'll see if we can work it into an issue.

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## NOTORIOUS NITROUS NAYSAYER

I am sure this won't be the only e-mail you get concerning Eric Teeter's explanation of nitrous injection, which lead the Mailbox section in the May '02 issue ("Notorious Nitrous").

I don't pretend to be a chemist or an engineer, but I can read. N<sub>2</sub>O works just as Mr. Teeter described. The rapid expansion of the nitrous oxide does cool the incoming charge. From the literature I've seen, it cools intake temperatures about 60 or 70 degrees F below the temperature that the same charge would be without nitrous injection. However, cooler air is more dense air. Air density directly affects the amount of oxygen in the intake charge.

Mr. Teeter's explanation leads one to think that nitrous does not add a significant amount of oxygen directly to the process. This is not true. During combustion, N<sub>2</sub>O breaks down to form two molecules of nitrogen and one molecule of oxygen at about 570 degrees F (I've seen both 576 F and 565 F in technical explanations.) Nitrous oxide contains more oxygen than air (36 percent versus 23 percent by weight) for a given volume. Nitrous is also more dense than air at any given temperature by a factor of 50 percent. So, N<sub>2</sub>O contains more than twice the oxygen of air. That is a pretty significant gain from the chemical reaction alone.

Both effects, cooler intake charge temperature and the release of the molecular bond early in the combustion cycle, add to the available oxygen for the combustion process.

Mr. Teeter also states, "This [the temperature differential] is why you get such an increase in horsepower and this [is] why you need more fuel to get this horsepower." The temperature differential that creates the "heat engine" is the difference between the temperature during the combustion process minus the charge temperature prior to compression. There must be a combustion event or the differential will be too small to produce usable work. The increased oxygen content provided by the nitrous supports more fuel per combustion cycle. The power is contained in the fuel, not the oxygen. More fuel equates to more work. A better understanding can be grasped if you consider that the N<sub>2</sub>O "allows" more fuel, rather than saying it "needs" more fuel.

Why then do we not inject oxygen? Because the nitrogen is a desirable presence. Pure oxygen would produce an instantaneous combustion event—an explosion. The nitrogen component

aides in buffering cylinder pressures during combustion to produce a flame front; nitrogen slows down the process.

Shannon DeWolfe  
Via the Internet

Thank you, Shannon, and here is another comment about the letter we printed.

## UPSET ABOUT NOTORIOUS NITROUS

I was very upset by the very first letter in the Mailbox section of the May issue. I do not know what Mr. Teeter's background is, but he is the one that has got it all wrong. As a graduate engineer with over 40 years of experience in heat-engine-based propulsion systems, I will assure you that the primary effect of nitrous oxide is as an oxidizing agent. The effect of charge cooling by evaporation of the fluid is so low that it can be ignored. The combustion energy released in the combustion chamber is limited by the oxygen content of the air, and increasing the effective oxygen percentage in the charge allows a higher temperature (and as a result, higher pressure) in the chamber. Values of 50 percent power increase for short durations is not uncommon. This is not totally free power, as it eats into the heat and structural capacity of your engine. (In other words, if you are not careful, you can destroy the poor thing).

Racers in recent years have reached into the rocket bucket for ways of boosting (and destroying) their engines. Nitro methane, hydrazine, and nitrous oxide are just a few of the devil's brews that have been foisted on the poor internal combustion engine. Most of these are poisonous, corrosive (to flesh also), and often explosive. Nitrous has found favor since it has relatively low toxicity and is easy to store and dispense. It works quite well.

Vance Jaqua  
Camarillo, California

Thank you, Vance. Is this subject closed or open to debate among readers? *Kit Car* is always available as a forum for opinion concerning kit cars and automotive discussion. We thank Eric Teeter, as well, for putting himself on the line and sharing his views with us.

Send your questions and comments to: *Kit Car* Magazine, Mailbox, 6420 Wilshire Blvd., Los Angeles, CA 90048. We will try to answer as many questions as possible, based on time and page constraints.



# SRMA VIEWS

by Del Austin

## TEAM EFFORT

"One for all, and all for one." "There is strength in numbers." "Everyone is important."

Each of these sayings is true, and they all fit in the context of our hobby. There is truly strength in large groups. For sure, everyone is important. When we are going in the same direction with the same purpose in mind, a lot can be accomplished, but it takes everyone, and everyone counts.

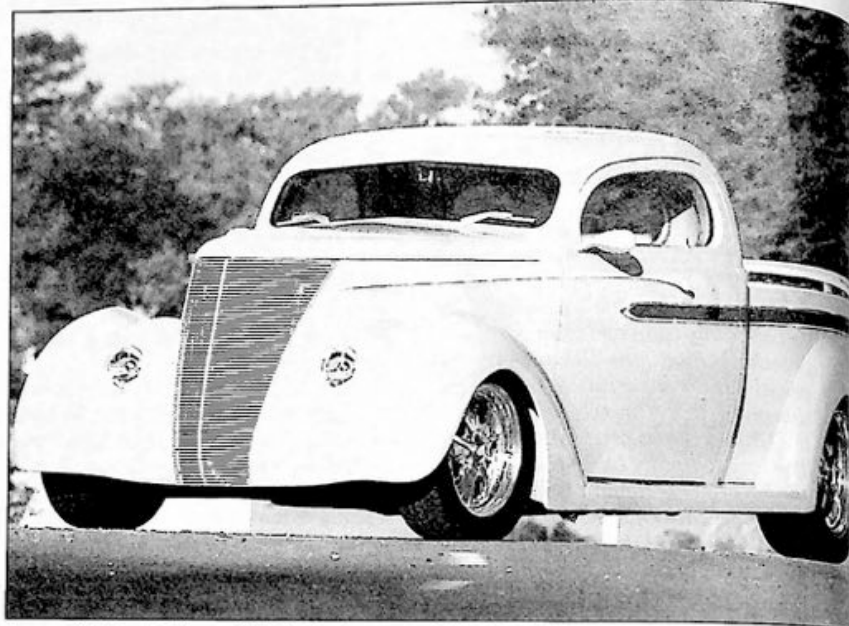
With that said, we can be proud of our individual and collective efforts on a number of issues at both the federal and state levels. Everyone should know by now, that the Federally funded scrappage legislation was defeated. This bill was defeated in part by the efforts of everyone who sent letters, faxes, and e-mails and made phone calls to their U.S. senators.

It was Senator Ben Nighthorse Campbell's (R-CO) amendment to eliminate scrappage (Section 822 of S. 517) from the Energy Policy Act of 2002, passed by unanimous consent, that eliminated the scrappage section of this bill. The Washington D.C. office of SEMA was very quick to point out that "this success would not have been possible without the literally thousands of phone calls, faxes and letters to U.S. senators that SEMA and the SEMA Action Network members were able to muster."

At the state level, Illinois, New York, and Rhode Island have introduced SEMA-model legislation that creates vehicle registration classifications for street rods and customs.

In Illinois, the Street Rod/Custom Vehicles bill has passed legislature. The Illinois State Senate approved the SEMA-model legislation by a 55-1 vote after the Illinois House of Representatives passed the bill with a 177-0 vote. The Illinois bill provides for special license plates while it exempts rods, customs, and kit cars from periodic inspections and emissions tests and addresses equipment requirements. The bill also includes appropriate year-break definitions, provides for the use of non-original materials, and creates titling criteria that assigns these vehicles the year of manufacture that the body of the vehicle resembles.

Although the New York bill has just been introduced, and at the time of this writing had not been voted on, the Rhode Island Senate has unanimously approved SEMA-model legislation to create vehicle registrations



Favorable legislation will help the owner of this kit truck register it as a '37 Ford truck, the car this replica was modeled after.

classifications for street rods, customs, and kit cars.

The Rhode Island bill provides for all the same and covers the same issues as the Illinois bill covers. An identical bill is pending in the Rhode Island House of Representatives.

A word to the wise—now would be a good time for the people in Illinois to contact their governor and ask him to sign this bill into law, and for those interested in New York and Rhode Island auto legislation, it is time to get on the phone, get paper and pen out, or fire up an e-mail.

The legislation mentioned above is just a small part of the good and bad legislation that is being introduced or that is pending. SEMA stays on top of all such bills. The latest SRMA Council Advocate from the SEMA Government Affairs Office listed many federal and state issues. Included are pending bills in Alabama, Arizona, Michigan, Nebraska, Texas, and California (which had four listed).

This column is not the correct forum nor do we have the space that would be required to go into each of bills and cover their content. That is why it is so important to be part of SEMA and SRMA; you'll be informed of what is really going on in your state as well as at the federal level.

Each person does make a difference, and there is always strength in numbers. Every club, every group, and

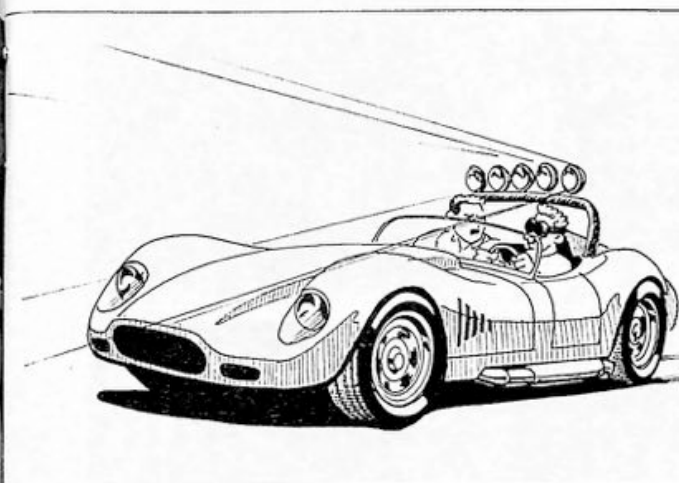
every organization is made up of individuals. Sometimes, it only takes a few individuals to make a difference. If you or your club has not already signed up, I urge you to contact Pat Talaska at SEMA for additional information on SEMA and SRMA. If you are a businessperson who is either involved or looking to get involved in this industry, you owe it to yourself to call Pat and get the forms to become a member of SEMA and SRMA. Contact Pat at 909/396-0289 or e-mail her at patt@sema.org. If you'd like to see the most comprehensive and exciting automotive aftermarket trade show in America, consider attending the SEMA Products Expo Show at the Las Vegas Convention Center on November 5-8, where more than 1,400 manufacturers of aftermarket accessories will be on display. Cars, wheels, tires, engines, carburetors, exhausts, cams, oil additives, batteries, electrical items, computer setups, brake systems, alternators, car covers, ground-effects kits, apparel, coatings and adhesives, gears, headlights, paint, steering systems, suspension, street rod parts and accessories, tune-up equipment, and nearly everything imaginable that you can put in or on your car will be presented at the show. Don't forget to check out Hot Rod Alley, a special street rod and kit car venue at the show. For information on the Expo, contact Pat at the number above. See you there.

KC

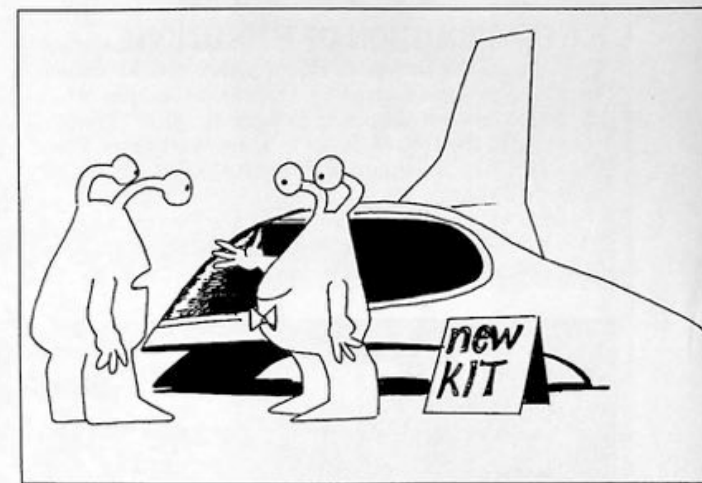
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# KIT CARTOONS

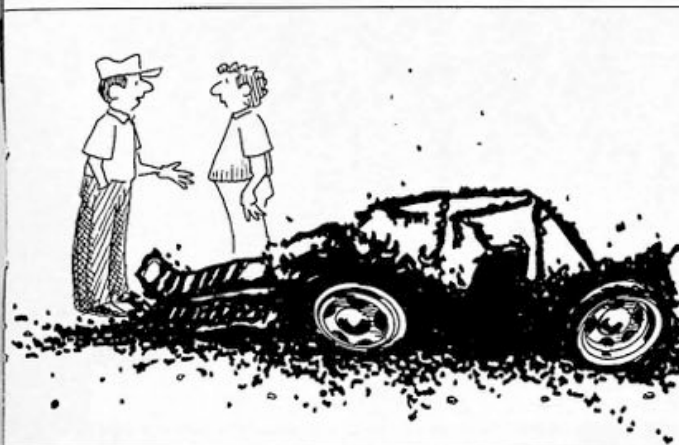
by Jerry Workman



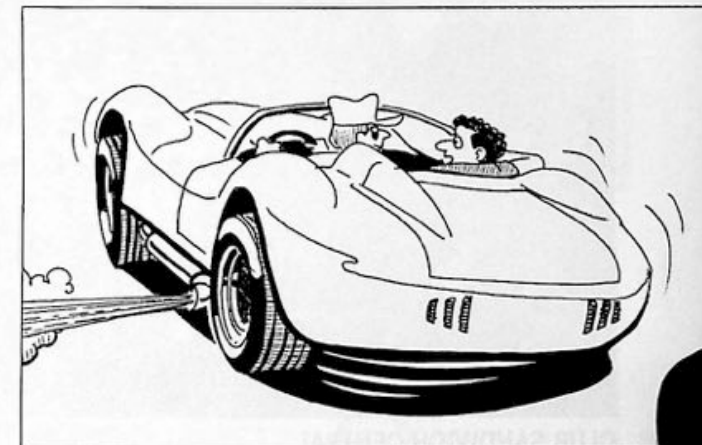
Now I understand why you wear welding goggles.



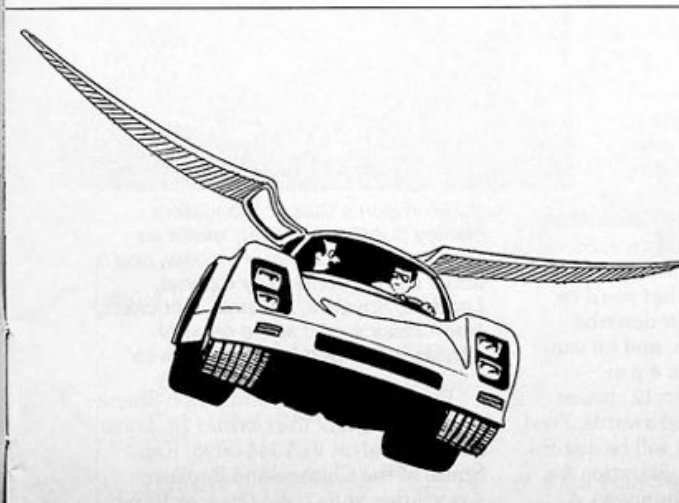
Fiero donor? What's a Fiero?



Our Hummer kits were doing pretty well until the competition began marketing Scud missile kits.

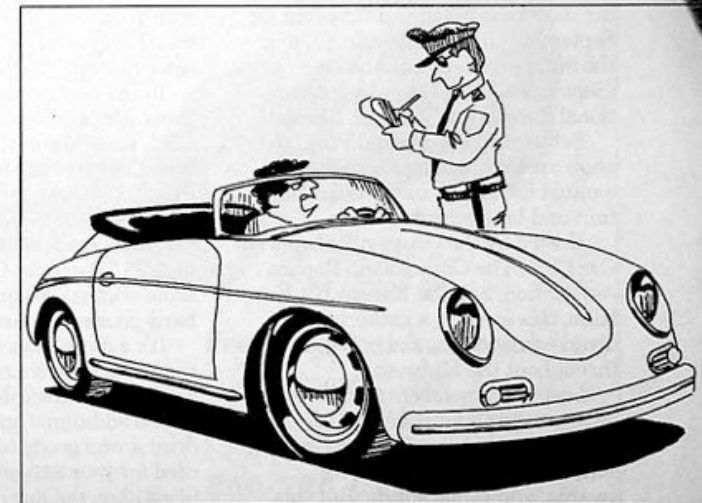


So, when you referred to the car as "retro," you didn't mean "the past." You meant retro-rocket?



Sure, I've heard of gullwing doors. I just didn't think you could actually fly with them.

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Just because it's called a "Speedster" doesn't mean I was speeding.

KC

SEPTEMBER 2002 KIT CAR 11



# SPECIALTY SCENE

News and views important to the kit car world

text by Denise Bruhn

## A NEW EVOLUTION OF EVOLUZIONE

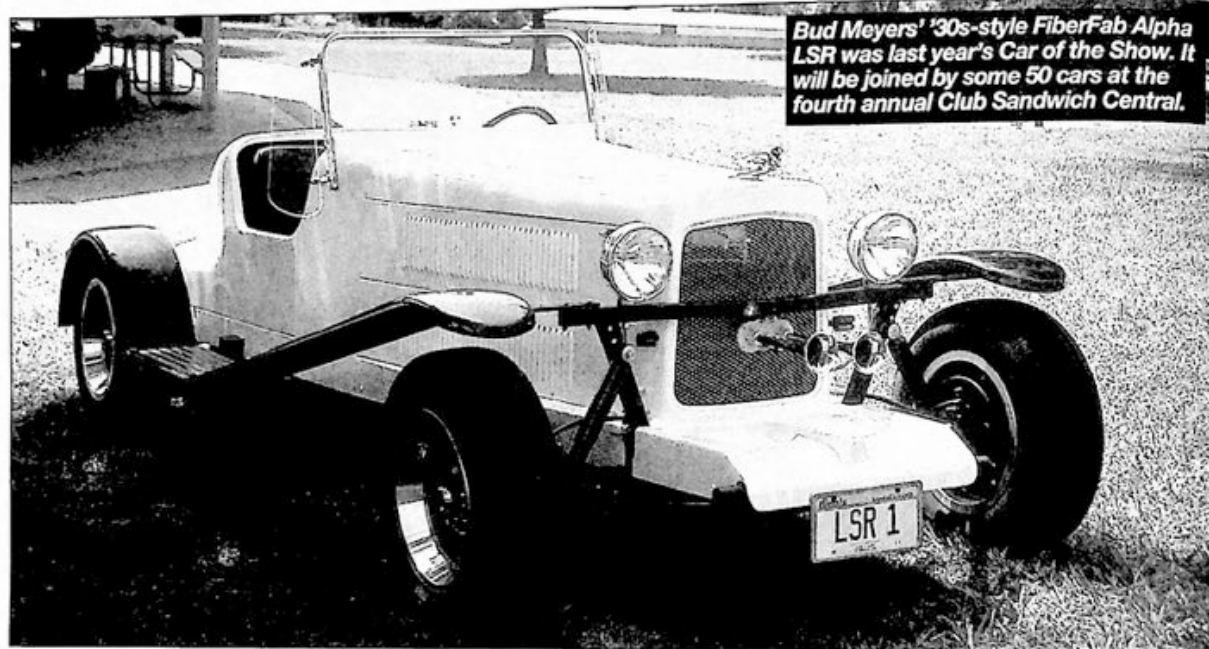
**E**voluzione, the European kit car maker that developed original designs such as the Evoluzione and the Attack, has added another weapon to its arsenal, the Evoluzione II, marketed in the United States by Euro-Works Ltd. The Evoluzione II fits Camaro or Firebird platforms in the '82-'92 Body F styles.

In the standard open-door model, the Evoluzione II GTS, the doors open like any regular production car and the kit comes complete, right down to the lights and fasten-

ing rivets. All the customer needs to supply is the donor platform.

The Evoluzione II GTE model has butterfly-type doors. Two gas shocks work to lift each door. The original door is used, and all the builder needs to add are the hinges, shocks, and doorskin.

For more information, contact Euro-Works Ltd. at Dept. KC, 3771 Eileen Rd., Dayton, OH 45429, 939/293-6834, or visit the Web site at [www.euroworksltd.com](http://www.euroworksltd.com).



Bud Meyers' '30s-style FiberFab Alpha LSR was last year's Car of the Show. It will be joined by some 50 cars at the fourth annual Club Sandwich Central.

## CLUB SANDWICH CENTRAL

**I**n a scheduling change to coordinate with Run And Gun, organizers of the fourth annual Club Sandwich Central car show have scheduled the event for September 15 in Collinsville, Illinois, the Sunday before Run And Gun begins (September 16) at Gateway International Raceway in Madison, Illinois.

Set in scenic Woodland Park, the show spotlights more than 50 cars against the grassy meadow and fountain-and-lake-accented locale.

Hosted by the Greater St. Louis Kit Car Club, The Chicagoland Replica Association, and the Kansas Kit Kar Klub, this event is a gathering of diverse cars, clubs, and hobbyists from throughout the Midwest.

Last year, members from as far away as the Oklahoma Kit Car Club and Missouri Valley Kit Car Club joined enthusiasts for food, fun, awards, and camaraderie. But this show is open to you and your kit car, whether you have a club affiliation or

not, so if you are planning to attend Run And Gun, or even if you are just planning a trip to the St. Louis area to cruise with your car, the Club Sandwich Central could be your place to stop...and show off.

In the past, as many as 100 cars have been on display at CSC. They've run the gamut from Cobras to '29 Gazelles, from '52 MGs to Type 55 Bugattis, from GT40s to Countaches, Ferraris, Spyders, Speedsters, Scorpions, '23 T-buckets, Cords, and even some original designs that you'd be hard-pressed to name or describe.

It's a day of sun, fun, and kit cars that runs from 8 a.m. to 4 p.m. Trophies are awarded in 12 classes, with 6 additional special awards. Food, drinks, and goody bags will be distributed for your \$10 preregistration fee (it's \$12 on the day of the show). A pizza party and car cruise follow the festivities.



Ed Morrison's Classic Roadsters Healey Sebring will likely make an appearance at this year's show, and it could be surrounded by Cobras, Lambos, Spyders, Ferraris, T-buckets, Neo-classics, and some original designs you have to see to believe.

For information, contact Don Shank or Bill Striegel of the Greater St. Louis Kit Car Club at 618/344-5698; Ken Smith of the Chicagoland Replicar Association at 847/564-0214; or Randy Scheltgen of the Kansas Kit Kar Klub at 316/722-5357.

[www.kitcarmag.com](http://www.kitcarmag.com)

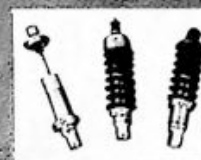
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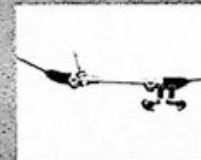
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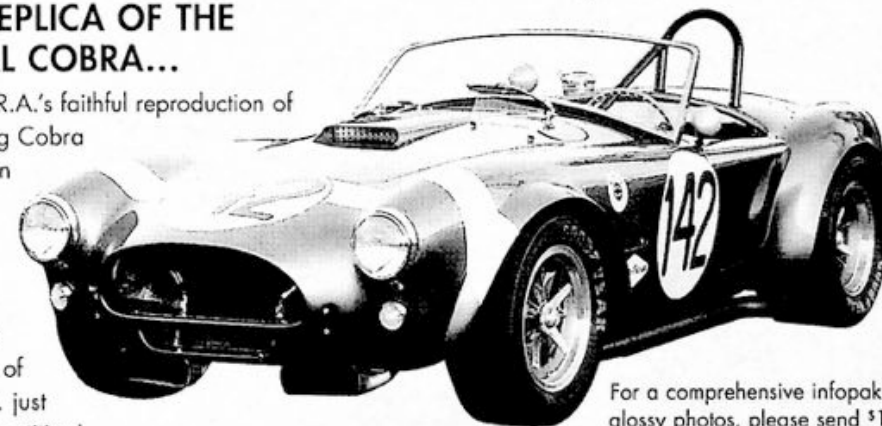
ul•ti•mate (ul'•tā•mīt) *adj*: most extreme; greatest

quin•tes•sen•tial (kwīn'•tē•sen'•shəl) *adj*: being the purest or most characteristic.

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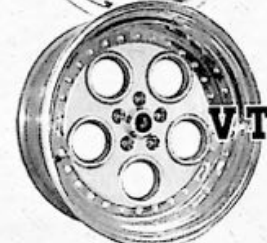
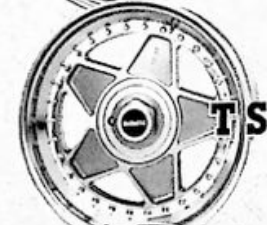
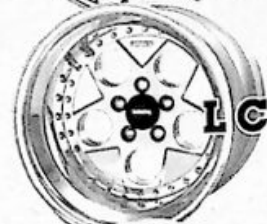
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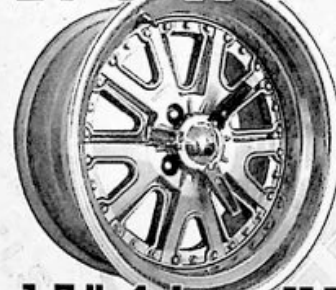
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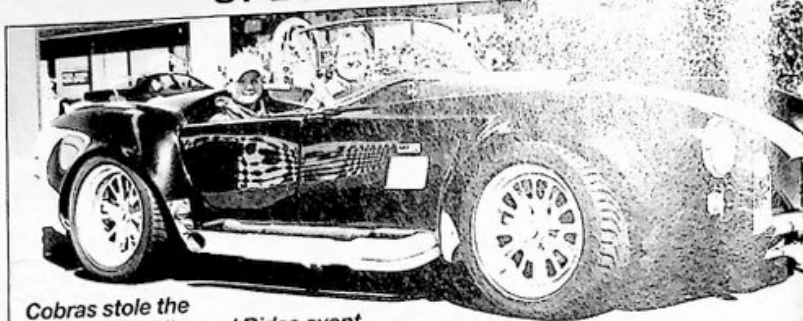


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## SPECIALTY SCENE



Cobras stole the show at the Ribs and Rides event in Huntington Beach, California. Here, Norm Judd and his son, Brian, pose in their FFR, powered by a 351 Windsor engine.

### RIBS AND RIDES

Clear skies and warm temperatures attracted Cobras and other cars from all over Southern California for a day of cars and barbecued ribs at Heeney's Weenies in Huntington Beach.

In attendance were 13 Snake repli-

cas, 1 California Advanced Vehicles' GT40 kit, and 3 vintage Mustangs. The Snakes included models by Factory Five, Superformance, Contemporary, L.A. Exotics, and classic Arntz and Cardiac kits. Stay tuned for information on next year's get-together.

### CALIFORNIA SHOWS

The Northern California Kit Car Club has lined up several events for the rest of the year.

The 20th Annual Handcrafted Automobile Concourse in San Leandro, California, will be held September 7-8, organized by Carolina Williams, who can be reached at 510/353-9914. This fun show is a tradition to those on the West Coast, and if your car is driveable from elsewhere across America, this is a great show to take in before you park your car for the winter. For more information, contact NCKCC President Shane Williams at shane\_1997@yahoo.com.

On October 5-6, the Snakes to the Lake event will be held, celebrating Cobra replicas and great scenery in an unforgettable cruise among car cronies. For information, contact

Jonah Tollefson at STTL2002@hotmail.com or Mary Borden at mary.s.borden@intel.com. Also check out the Web site at www.norcalcobras.com.

The annual Club Sandwich kit car show will take place in Laughlin, Nevada, on October 12-13 under the joint leadership of the Arizona, Northern California, and Association of Handcrafted Automobiles kit car clubs. This Original Club Sandwich is held in the middle of the tri-state area of California, Nevada, and Arizona, and it generally attracts five- or six-dozen proud hobbyists who enjoy the camaraderie and the displaying of their projects. For information, contact Shane Williams of NKCC at 510/353-9914; Ron Biggerstaff of AHA at 909/796-9946; or Frank Summers of AKCC at 480/838-7258.

### AUTOMOTIVE ART COLLECTION

You've seen his pen-and-ink work on the pages of *Kit Car*. You can view it in this issue's Kit Car Profiles on page 74. Now, you can own some of K. Scott Teeters' automotive art with The Detroit Iron Automotive Art Collection.

Scott has burned a CD collection of more than 350 automotive images that he has drawn, including 15 Kit Car Profiles. On disc, you can own such classic drawings as: Cobra 427; '34 Ford; '53 Mercedes 300 SL; Porsche 550 Spyder; '55 T-bird; '48-'54 Jaguar XK120; and many more. Scott is also one of the premier Corvette pen-and-ink artists in America, and many of his images are of America's most enduring sports car.

Scott has created a virtual Web site on a CD, devoted to classic car art. For information on The Detroit Iron Automotive Art Collection, contact Scott at 609/714-0261, or e-mail him at lightoak@comcast.net. You can also visit his Web site at www.precision-illustration.com.



Kit Car profiler K. Scott Teeters is now offering a CD that contains 350 car images, including 15 Kit Car Profiles.

KC

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The Caroselli Design Rodster is unique by itself, but this one was expanded to become a four-seater that can accommodate an average family

text and photos  
by Mike Blake

**Q**uality time has become a buzzword in America, and quality car time fits right in with that philosophy of spending more of your off-hours with family. The fun of having a kit car and the strategy of spending more time with your family may seem mutually exclusive, however, when you're faced with the prospect of owning a two-seater or a roadster.

As a result, more and more kit car builders are turning their thoughts to four-seat, family-style kits. Two such hobbyists are Jim and Joan Drucker of Larchmont, New York, who took a Caroselli Design Rodster and turned it into a four-seat Family Rodster.

The buildup and modifications were done by Bob Venezia of Some Assembly Required in Huguenot, New York. Bob builds custom cars and had previously built the Druckers a Suzuki Swift, which he converted into a beach car—no roof and cut-down doors. The Druckers told Bob they wanted a '50s-style hot rod for the family—a fun car they could enjoy with their two teenage children.

The concept of a four-seat Rodster was Bob's vision. Bob showed them the Caroselli Rodster; he explained the conversion, and the Druckers left the rest to Bob.

The car is the same size as the Rodster and fits on the same shortened '92 Blazer S-10 chassis. Bob added ½-inch-square tubing with a 0.065-inch wall thickness under the outer skin of the header and riveted a ¼x1-inch aluminum strip through the plastic header cap to provide a small gap for the new top to slide into.

Bob modified the tonneau cover by 4 inches to allow for a Wrangler C-7 jump seat addition. He removed the B-pillar braces on the Rodster to allow access to the rear seat and welded the fold-up brackets from the rear seat of the donor to the sport bar to re-brace it. Then he cut the tonneau cover by 3½ inches to allow for a hardtop conversion as well.

Bob then added rear hinges to the rear seat to allow it to fold down for cargo and bonded an aluminum plate to the inside cover above the B-pillar to

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# Family Rod



Jim and Joan Drucker created a four-seat family car out of a Caroselli Design Rodster with the help of Bob Venezia of Some Assembly Required.

accept bows for the convertible top, and voilà! The two-seat Rodster became a family rod.

Bob also lowered the Beltech suspension by 3 inches for a better ride and installed a GM 4.3L V-6 engine. He harvested nearly everything else from the donor car—aspersion, ignition, transmission, wheels, shocks, brakes, and gauges.

For a nice '50s hot rod look, Bob added a 15-inch Grant wood steering wheel, Dolphin Gray upholstery from East Coast Trim, and gray nylon carpet; ubiquitous, '50s-esque fuzzy dice hang from the rearview mirror.

He had the car painted PPG Radiance Candy Apple Red with a gold base, and he installed the black canvas convertible top.

Bob's creativity and work allowed

the Druckers to gain their dream: a spiffy hot rod they can drive around Larchmont, with their children enjoying the ride as well.

Until someone comes up with a four-seat Cobra or GT40, those who don't want to ride around in a Hummer kit might do well to consider a four-seat Rodster. As ads of yesteryear declared, "It's fun for the whole family." **KC**

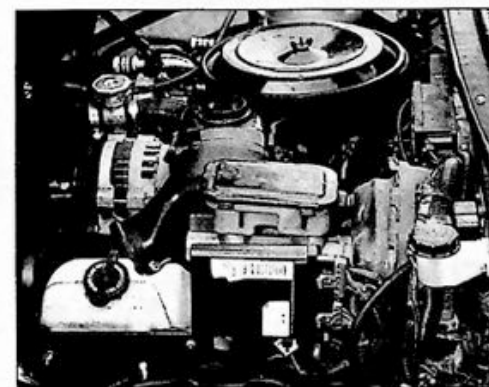
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Bob had the car painted PPG Radiance Candy Apple Red with a gold base, and voilà—the Druckers have a car that looks like a '50s hot rod but has four seats to give it a family feel.



The GM 4.3L V-6 engine is an addition to the basic donor, but nearly everything else is stock, including aspersion, ignition, transmission, wheels, shocks, brakes, and gauges.

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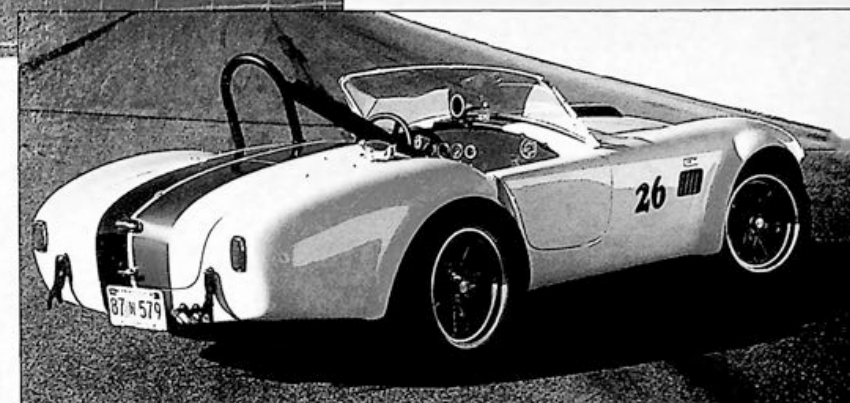




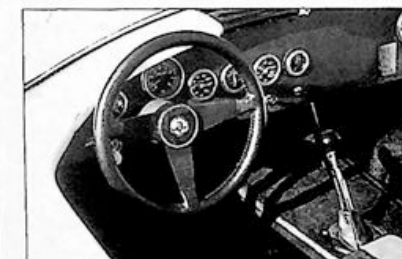
# Terrific 289

This racing Snake is an uncommon compromise between the 427 S/C and an all-around car

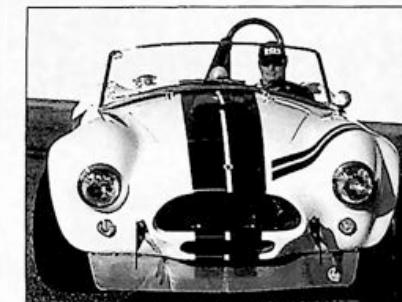
text and photos by Mike Blake



The 289 FIA Autospeed body is a good fit on a 4-inch chrome-moly frame with a 90-inch wheelbase. The PS Engineering wheels are 9x17 inches in front and 11x17 inches in back, covered with Goodyear GSC Eagle tires.



The classic interior includes black leather seats, black wool carpet, a Moto-Lita steering wheel, and Stewart-Warner gauges.



Scott says his 289 handles better than his old Cobra 427 did. The handling relies on Jaguar XKE front suspension and rack-and-pinion steering box, as well as a Jag rearend that hugs the track.

Scott has pushed his 289 past 145 mph, and at last year's Run And Gun, he wound up in Second Place on the autocross (Street Small-Block Class) and Second on the road course. He was among the leaders on the dragstrip when mechanical problems forced him to park the car.

Scott Richey has loved fast cars since childhood—his father got him involved in the hobby—so it's no surprise that when he chose to go the kit car route, his projects were of the Snake persuasion.

Scott, a pharmacist from Newburgh, Indiana, says, "I have always loved Cobras and high-performance driving. For nine years, I owned a Classic Road-

sters 427 S/C, but when I saw the beauty of this Contemporary 289 (which was available), I sold the 427 and bought the 289."

Why trade in a classic 427 Snake for a classic 289? Scott says, "This 289 handles so much better than the 427. It really hugs the road. I had a small-block 351 Windsor in the 427, the same as I have in the 289, but my 427

had a Ford 8.8-inch rear axle, and this car has a Jaguar rearend. There is no comparison in the handling. I used to spin out the 427 often, but in the 289, I run out of nerve before it does." That's from a guy who has had this baby at more than 145 mph.

Scott doesn't run out of nerve often, as we witnessed when we caught up with him at last year's Run And Gun.

Scott and his 289 finished in Second Place on the autocross (Street Small-Block Class) and Second on the road course (accelerating to above 130 mph), and was in the hunt for the top spot on the dragstrip when mechanical problems took him out of that competition.

Scott's 289 is powered by a Ford SVO 351 Windsor crate engine, accompanied by roller cams, Ford aluminum

GT-40 heads, K&N air filters, Jet Hot-coated exhaust, a Richmond five-speed close-ratio transmission with a Hurst shifter, a Centerforce 10½-inch clutch disc, and a 14-volt alternator. For extra boost, he added an ACCEL DFI 65mm electronic fuel injection system—eight 24-pound fuel injectors—and an electronic MSD ignition system. The combination puts out 375

hp at 5,500 rpm, with 330 lb-ft of torque at 4,700 rpm.

"I didn't build this car," Scott says. "I bought it already completed, and my friend Robert Turpin helps me maintain it and is the mastermind behind its performance; but that doesn't diminish my enjoyment of owning, driving, and tweaking the car."

Scott added an EFI fuel-management system.





Scott Richey and his wife, Jackie, believe this Contemporary 289 FIA is a compromise between an all-around race car and a Sunday cruise car. Here, they "cruise" at Gateway International Raceway, near St. Louis.

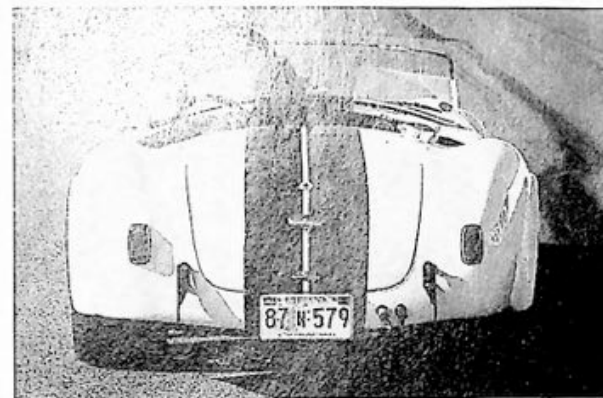
system as a compromise. He says, "I put five miles on the street for every mile I put on the track—some 1,500 miles a year—and this system is a great compromise for street and track and a better system, I think, than straight carburetion."

He likes the concept of compromise, saying, "This car is a wonderful compromise between an all-around race car and a car I take on Sunday

cruises with my wife, Jackie. The system and the car require very low maintenance and provide exceptional performance and handling on the street and at the track. I also love the 289 even moreso than the 427 because there just aren't a lot of 289s around compared to the 427 S/C."

Scott's 289 FIA Autospeed body fits snugly on a 4-inch chrome-moly frame with a wheelbase of 90 inches. The car

sits on a Jaguar rearend and carries a 3.07:1 posi-differential ring-and-pinion ratio. It has custom tubular rear half-shafts, a Watts linkage, and triangulated rear lower control arms, all adding to the exceptional handling. Penske remote-reservoir double-adjustable rear shocks, Eibach rear springs, and Wilwood rear brakes work in concert with competition-suspension front and rear sway bars and front and rear

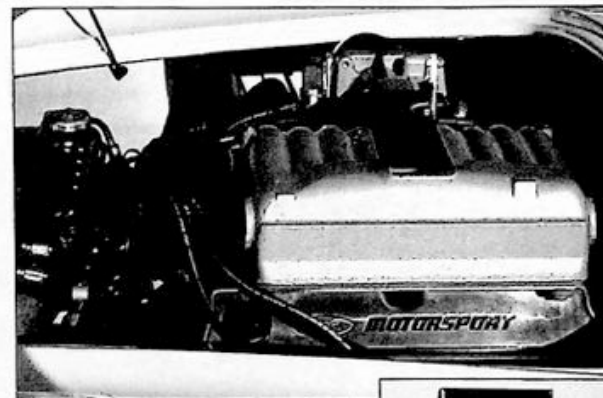


The Jaguar rear carries a 3.07:1 posi-differential ring-and-pinion ratio, tubular rear half-shafts, a Watts linkage, and triangulated rear lower control arms, which offer Scott exceptional handling in concert with Penske remote-reservoir double-adjustable rear shocks, Eibach rear springs, Wilwood rear brakes, and Canaska Motorsports front and rear sway bars and antiroll bars.

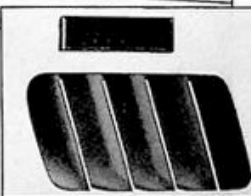
antiroll bars from Canaska Motorsports. The front suspension and rack-and-pinion steering box are both reliable Jaguar XKE designs, and they are accented by Jag spindles, Penske front shocks, Eibach springs, Wilwood brakes, and a Tilton master cylinder. The wheels are PS Engineering 9x17-inches in front and 11x17s in the rear, and Scott has covered them with Goodyear GSC Eagle tires, P275/45R17s in front

and P315/35R17s behind.

The interior is finished with a Moto-Lita steering wheel, Stewart-Warner gauges, Contemporary seats clothed in black leather, black wool carpet, Lexan window glass, and a three-point chassis-mounted 1½-inch-thick rollbar. The exterior is white with very classic-looking stripes—one black and one metallic green (Scott believes they are PPG colors, but since he bought it assem-



This 289 roars with its 375hp Ford SVO 351 Windsor crate engine. Roller cams, Ford aluminum GT-40 heads, and an ACCEL DFI 65mm electronic fuel injection system reward Scott with 330 lb-ft of torque at 4,700 rpm.



bled, he is not 100 percent certain). "I just liked the clean look of it," he says.

Scott is looking to compete this year at Run And Gun and at the Mid-America Challenge in Topeka, Kansas. He believes his best race runs are still ahead of him in this 2,000-pound Snake.

Would he give this 289 up for an even more powerful 427? Scott says, "No way. Besides, I let my dad drive it, and he loves it. So do I." And so do we. **KC**

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# Fiero Stretch

Lengthen a Fiero donor like a pro  
text and photos by Harold Pace

**W**hen manufacturers in the kit car industry started cranking out Lamborghini and Ferrari replicas based on the Fiero platform, designers knew the chassis needed a stretch to achieve a more accurate look. The Fiero wheelbase is 93.4 inches, while a Lambo Countach is 96.5 inches, a Diablo is 104.3 inches, and a Ferrari Testarossa is 100.4 inches.

Although building on a standard-length Fiero chassis is much cheaper, many builders will not settle for the shortened look. There are many ways to lengthen the chassis, ranging from professional to suicidal, and we've seen 'em all.

The hardest part of the job is making sure everything gets lined up straight again when the car is complete. You will also usually need to widen the chassis or suspension to more closely match the track of the original.

Another problem is keeping the chassis square when the top is cut off (necessary with most Lambo kits). The standard Fiero relies on the top for much of its rigidity, so when the top is removed, the chassis will warp out of alignment if it is not firmly bolted to a rigid, steel chassis table. If you use the standard four-banger or 2.8L V-6, you might not notice

misalignment as readily as you would with a fire-breathing turbo or a V-8 swap, but it will probably not track straight, and braking and tire wear could be adversely affected.

When we got a call from John Austin at Austin Conversions, we were excited to hear he was planning to stretch a Fiero 11 inches before installing one of his Design One Northstar swaps. Austin and partner Kevin Leslie have been making these installations for several years now, and they really turn the mild-mannered Fiero into a serious Corvette basher. Austin installed a D&R Diablo kit on an '84 base model Fiero for customer Phil Craine. He recruited Terry Fisher, who normally fills his time building NASCAR trucks and selling heavy-duty fasteners, to help with the fabrication.

Fisher has a professional chassis surface table in his spacious shop, just what was needed to keep the Fiero square while it was being dissected. A chassis table is constructed of thick steel to provide a perfectly level surface on which to attach a chassis so you can accurately measure and align all the components. It is also heavy enough to not be affected by changes in temperature or weather, which temporary wooden jigs can be. Working on an uneven shop floor or with flimsy wooden jigs is a recipe for chassis gremlins.

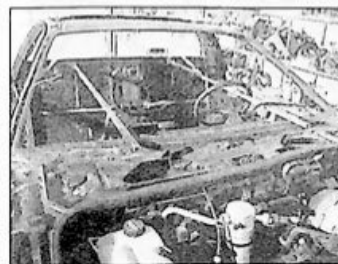
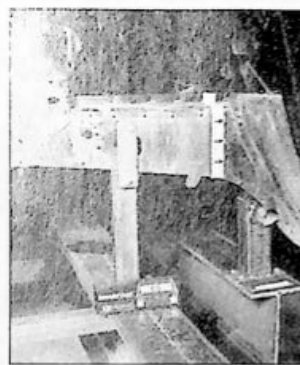
The Diablo kit is one of the most difficult to stretch, as a great deal of the original Fiero chassis must be cut away for body clearance, including quite a bit of the firewall. This means Austin and Fisher had to back-half the chassis and make an entirely new rear subframe from scratch. Some kits, such as Ferrari Testarossa and F355 replicas, do not require as much cutting and can be stretched more easily, requiring only lengthening of the chassis with extensions.

After all the stretch work, the resulting car will run like a thoroughbred and be better reinforced should the worst occur. Here's how this stretch was done.

KC

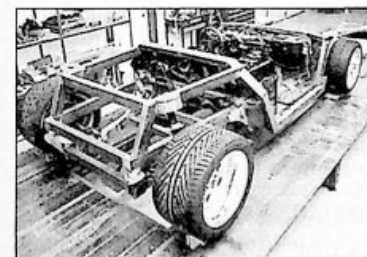
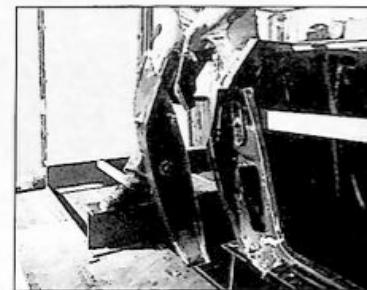
**1** First the Fiero was stripped of all nonessential items, such as the running gear, rear suspension, rear brakes, body panels, interior, and bumpers. The frame was bolted to the table with metal jigs fabricated by Terry Fisher. The jigs kept the frame from moving as it was cut apart and welded. The adjustable legs on the table allow it to be precisely leveled to keep everything square. The frame was checked to make sure it was square. Note: This is also how racing cars are built.

**2** The frame was cut, and the back of the car was removed. The rear frame-rails were cut at this point. The extended rails will be butt-welded together with a MIG welder and plated over with steel for strength. The cut (note arrows) was made before the frame starts tapering to simplify fabrication. Note that a level was used to make sure everything was square.



**3** Temporary bracing was tack-welded across the cockpit and doors to keep the pan square after the roof is removed. Once the roof is removed, the chassis will warp, and it will be very difficult to get it aligned again. The roof will be removed with a Sawzall.

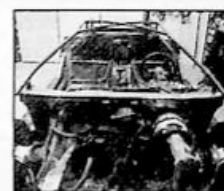
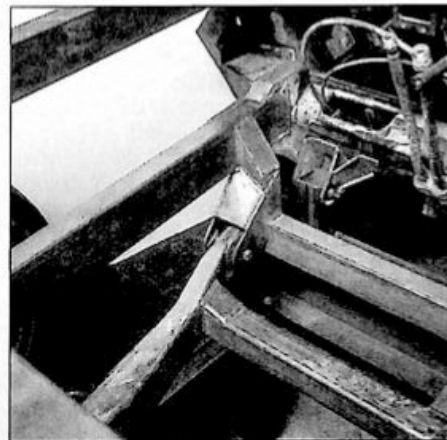
**4** The back half of the car was removed. Beams were welded in the door frames to preserve rigidity. The door-jambes were cut off. The Fiero structure requires a lot of cutting to allow the Diablo shape to fit over it.



**5** A new rear subframe was fabricated from 2x3-inch mild steel (0.120 wall). This subframe accepts stock Fiero suspension; up-rated parts may be substituted. The top mount picked up from the stock Fiero location.

The subframe required many hours of fabrication and runs around the original firewall to increase the strength.

**6** The extra cross-member ahead of the cradle adds strength to the lengthened chassis. Note how the cradle was reinforced.



**7** A diagonal brace connects the rear shock tower to the brace below the door area. These were tack-welded in place while everything was checked for alignment. The body subframe was fabricated to mount up to the body and be bonded in. It locates and strengthens the body. It was made to bolt on and off for maintenance or repair.

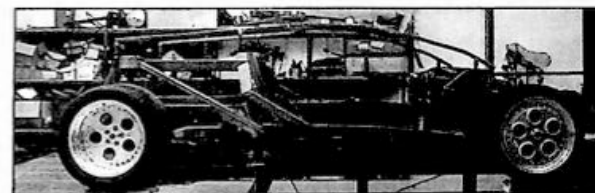
ens the body. It was made to bolt on and off for maintenance or repair.

**8** Posts were welded to the top of the frame. The body subframe posts slip over these and were bolted in place. Once the top was removed, a lot of stiffness needed to be added. Here we see 2x3-inch bracing and framing that was added to strengthen the front of the cockpit area. These braces are not in the entry area of the body.



**9** Always trial-fit any additional tubing with the body on before final welding.

**10** While preparing the frame for the D&R body, a lot of stock Fiero metal had to be removed. In order to clean it up and close the gaps, new metal was welded into the firewall area. You may need to do similar filling in other areas depending on which body you have.



**11** The A-arms had to be widened 2 inches per side to match the track of the original car. Other kits may need more or less widening, and other alternatives use fully fabricated suspension arms or specially made offset wheels. This side view of the frame shows the extensive bracing added and the truncated front end.



**12** The front of the Fiero subframe was trimmed back and capped for a professional appearance and more strength. The body was installed on the chassis and bonded to the top subframe with fiberglass. The subframe will be bolted to the chassis, and the body is bolted on with rubber isolators. The Northstar was installed in the rear cradle. Once the steps are complete, you wind up with a car such as the one in our lead photo.



# Gauging Protection



PHOTO COURTESY OF AUTO METER

## New dash readouts immediately let you know what's going on inside your engine

text by Robert Eckhardt

**K**nowledge may be power, but inaccurate information can be dangerous. When you want to know what is going on inside your engine, you are at the mercy of the accuracy of your gauges. Fortunately, all of the major U.S. instrument manufacturers make very good gauges, but are some better than others? Are there any new gauge technologies that bear examination? Is it important for the gauge to read exactly down to a single digit? The answer is yes to all of these questions, depending on your application.

For decades, analog gauges revealed how the engines in our street machines were performing. Knowing the oil pressure and water temperature was as simple as looking to make sure the needle was in the safe zone. The driver took a quick look at the gauge to make sure the oil pressure was above 40 pounds and the water temperature was below 210 degrees. If they were, all was

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Gauges read the soul of the engine. Can you trust your gauges?

right with the world. As car owners began putting more powerful engines in their cars and the cost of the powerplants began to rise, concerns developed about the accuracy of the gauges.

It is important to realize that the accuracy of the reading is dependent on the sensor and the gauge. There is a difference in sending units. The standard automotive pressure and temperature sensor costs about a dollar. Some of the high-end gauges utilize \$50 sensors, which are more accurate and read faster. You will not find a \$50 sensor in a \$200 gauge kit. There is also a difference in gauges. The difference is in the sensitivity of the needle mechanism. The newer electric analog gauges use better circuit boards, while some of the digital-gauge companies install microprocessors to interpret the signal and display the reading. The more expensive gauges cost more for a reason: They use better components. Are they worth it? Read on.

The size of the gauge has nothing to do with its accuracy. Using a larger dial face and spreading the range of the gauge across the entire dial face, however, allows the driver to see more easily the increments marked on the gauge. For instance, a 90-degree-sweep

oil-pressure gauge would have printed numbers in 25-pound increments, while an oil pressure gauge with a 270-degree sweep would be broken into 5-pound segments. Both gauges are accurate. It is just easier to interpret the gauge readings more exactly with a large-sweep gauge.

### MORE ACCURATE?

The debate about whether mechanical or electric gauges are more accurate is still argued. Electric gauges are easy to install, so they are good for street use. Mechanical gauges are far more difficult to install because the capillary tube, oil, and gas lines cannot be crimped or routed too close to a heat source. If they are, the gauge will not work or will give incorrect readings. The other disadvantage to mechanical oil-pressure and fuel-pressure gauges is having oil and gasoline inside the driver's compartment. Most fuel-pressure gauges solved that problem by having the fuel line end at the firewall and go into an isolator. On the other side of the firewall, a tube filled with a nonflammable liquid goes to the back of the gauge. It still gives accurate pressure readings but without any fuel inside the car.

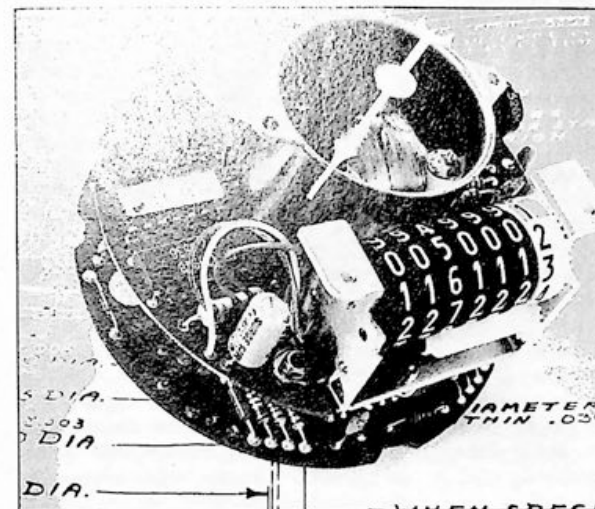


PHOTO COURTESY OF CLASSIC INSTRUMENTS

The inside of an electric gauge reveals the intricate combinations of resistors, diodes, and microcontrollers. Accuracy is programmed into these gauges.

Mechanical gauges were once considered to be more accurate because they have a direct response to the oil or fuel pressure and therefore read faster, whereas an electric gauge receives a signal that must go through a pressure sensor and a transducer first. With the advent of the new electric and digital gauges, the argument for mechanical gauges reading faster and more accurately may not be the case anymore.

### INSURANCE POLICY

Because the cost of high-performance engines continues to escalate, it is important to have a gauge that is more accurate than the ones available in the past. The difference between a \$1,500 motor and a \$15,000 powerplant mandates better gauges. Think of it as an insurance policy.

Some of the analog-gauge companies have improved their gauges recently. They incorporated better needle movements, added more full-sweep gauges, and added stepper motors to their electric gauges.

Ron Piasecki explains Auto Meter's approach: "The original street gauges

had to be upgraded because they were being used in higher-performance applications than they were originally intended for. We adjusted the circuitry to accommodate for that. As far as response time and accuracy on the new electric gauges, they are comparable to digital gauges.

"A mechanical gauge has a quicker response time than a standard electric gauge. There are full-sweep electric gauges utilizing higher-end senders that give you better accuracy than a mechanical gauge. There is a difference in sender units. Some cost a dollar, and others are in the \$50 range. It comes down to the quality of the sending unit. Our full-sweep electric gauges use the \$50 sending unit.

"Our Phantom and Ultra Lite lines have electric gauges that have a 90-degree sweep. These are street gauges because most of the guys on the street don't need to know that they are running 53 psi. As long as they know they are between 50 and 55, that is good enough. If you want to be more accurate, move up to a mechanical gauge or a full-sweep electric gauge,



PHOTO COURTESY OF CLASSIC INSTRUMENTS

The analog gauge has been around for decades. Newer versions have been improved with better needle mechanisms. Reverse-rotation speedometers were easier to read in the old Cobras.

which utilize a 0- to 5V pressure transducer. There are full-sweep gauges in our Sport-Comp and Phantom lines that have the better sending units.

"Our new Cobalt series are all electric, full-sweep gauges with stepper motors. The stepper motor allows us to use a couple of smaller boards and keep all the components within the gauge case. The oil-pressure gauge in the Cobalt series is our first full-sweep, electric, oil-pressure gauge."

### MICROPROCESSORS

Nordskog Performance Products makes electronic analog and digital gauges. Patrick Hancock of Nordskog says, "Our analog gauges are microprocessor-controlled, and we use stepper motors to drive the needle. It is like a servo. The neat thing about it is that you can have high- and low-recall settings. On some of our gauges, you can set it to activate a relay to turn on a fan or something like that.

"Our gauges are extremely accurate. It comes down to the sending unit. It is not really the gauge that has the accuracy problem but the sending unit. We use a standard automotive sending unit, which is the one that everyone uses. If there is an inaccuracy there, the gauge will show it. We have people that call and say our gauge is off. They are comparing the reading off our gauge against the mechanical gauge they were using. Nine times out of ten, the mechanical gauge is off a few pounds. We believe we use the right programs to make the gauge as accurate as possible. It is all in the programming.

"Our digital gauges are just as accurate as our electric analog gauges. They use the same programming. It is just a different way of displaying the information."

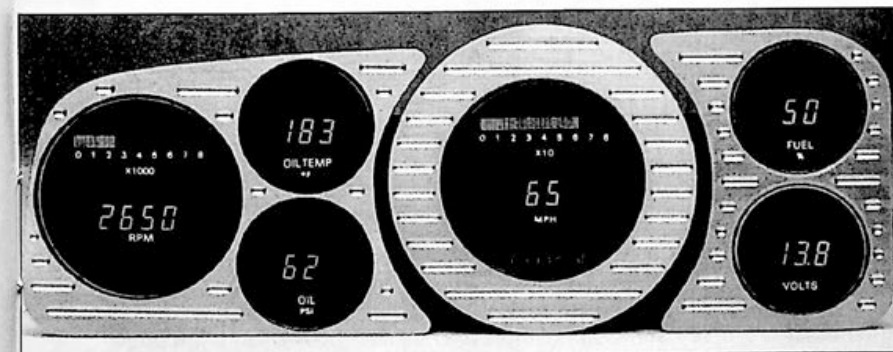


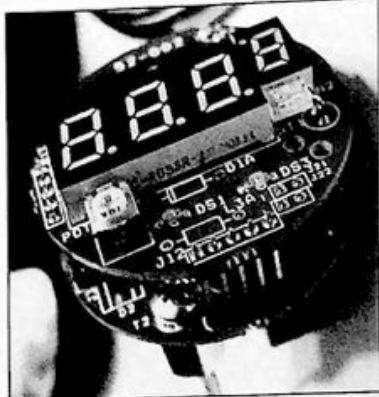
PHOTO COURTESY OF DAKOTA DIGITAL

Digital gauges are becoming more popular because of their accuracy and the different look they offer.

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## GAUGING PROTECTION



The inside of this digital gauge shows stamped computer boards assembled by a computer-insertion machine that builds each gauge exactly the same every time.

PHOTO COURTESY OF TELTEK USA

Also, you don't have any question as to where that needle is pointing.

"The speedometer and tachometer are digitally derived. The speedometer can be calibrated for nearly any tire and/or gearing combination. Once the gauges are installed, you calibrate them for your combination using a simple push-button calibration routine.

"With a digital gauge, you will not get any needle bounce or parallax error if you look at it off to the side just a little bit. Aside from the accuracy, digital gauges can have built-in features like adjustable warning features. Visibility is excellent in both daytime and nighttime. It is the same display technology that the Big Three automakers use. The numbers automatically dim down for nighttime driving when you turn on the headlights. They also have a neat blackout look when the car is turned off.

"They are not difficult to hook up. They install just like regular gauges with a power and ground lead, a wire

out to the sender, and one wire to the terminal for dimming, as opposed to an internal light found on an analog gauge. It still requires a four-wire hookup."

## NUCLEAR POWER

A new company in the automotive-gauge market is Teltek USA. It is an 18-year-old company that supplies instrumentation to nuclear power plants, the food industry, and medical institutions, where accuracy is extremely important. It is also the leader in supplying digital gauges to the OEM semitruck industry. Bob Johnson of Teltek says, "There is a difference between digital and analog gauges—basically, accuracy. A digital gauge is more accurate. In the case of the temperature gauge, we are looking at a particular temperature. The sensor gives off a certain resistance. We programmed the microcontroller to say that X number of resistance equals a certain temperature. The microcontroller is programmed to

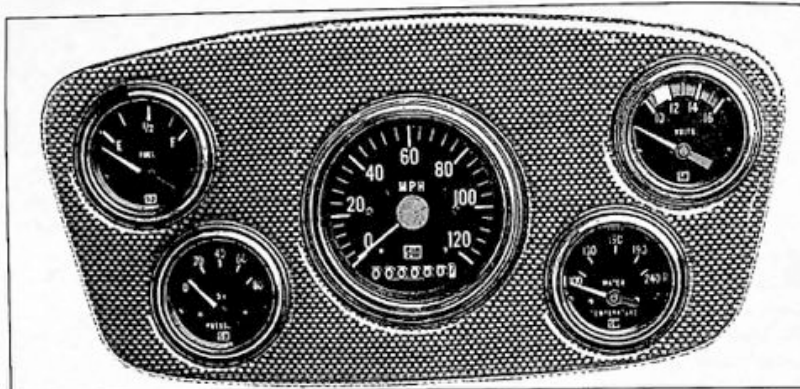


PHOTO COURTESY OF STEWART WARNER

The layout of the gauges is a matter of personal preference. The number of gauges, their size, and their location are ways to customize the interior of the car.

## ONLY DIGITAL

Dakota Digital makes only digital gauges. Ross Ortman of Dakota Digital believes car builders are using more digital gauges. "Digital gauges have a precise readout so you get a more precise reading," he says. "There is no guessing as far as where the needle is sitting. The numbers themselves are larger on a digital gauge compared to the numbers on an analog gauge.

"The accuracy comes down to the sending unit, which is the weak link. The accuracy of the sending unit is going to be the same for either type of gauge. We use standard automotive water-temperature and oil-pressure senders. We give as precise a number as that sender can supply. With a digital gauge, we are not going to add any additional error that is found in the needle mechanism on an analog gauge.

## HOW MUCH ACCURACY IS REQUIRED?

Automotive enthusiasts agree that accuracy is important, but how accurate do you need to be? The answer involves how much money you want to spend, how often you look at your gauges, and your application. There are differences among gauges. There is no way to look at two gauges and be able to tell which one is more accurate. That is the case for analog and digital gauges. Very few people in the gauge industry advertise their accuracy specifications.

When the needle points to somewhere between 40 and 50 pounds on an analog oil-pressure gauge, is that enough information, or do you need to know that the pressure is 48 pounds?

With analog gauges, the driver has to interpret what the gauge is showing. With a digital gauge, the driver sees the exact number. Is the digital gauge making a better interpretation than you are? Is it easier to reference where the pointer is on the dial face of four analog gauges or read the number on four digital gauges while you are driving? For years, racers rotated their gauges so that all the normal readings were facing straight up or totally horizontal, depending on the configuration of the dash. Most of the analog-gauge companies have now designed their gauges so that normal reading is in the straight-up position.

When you only have a split second to scan the gauges, a reference may be all you need. When you have a problem, however, is it useful to know that the water temperature is at exactly 224 degrees and climbing or that the oil pressure is 22 pounds and falling? There is no correct answer for every application. A good case can be made for doing away with all gauges and just using idiot lights, but no car guy wants to admit he is an idiot.

What temperature is this gauge showing? Do you want to know the exact temperature, or is it sufficient to know the needle is pointing straight up and that the temperature is in the normal range? The answer will direct you to either an analog or digital gauge.

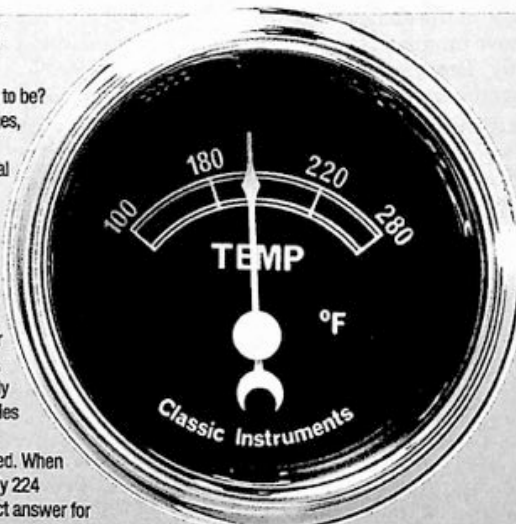
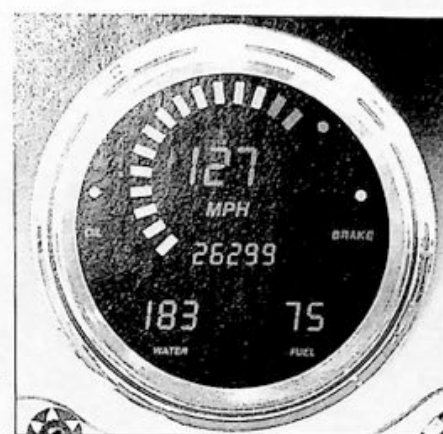


PHOTO COURTESY OF CLASSIC INSTRUMENTS

Digital gauges show the exact number rather than a readout. The driver does not need to interpret or guess at the reading.

All-in-one gauges clean up the dashboard. You only have to look at one spot to see all the gauges.

This may take some time adjusting to if you are used to looking at five or six separate gauges.



One advantage of electric and digital gauges is that they can be programmed to remember high and low readings. This gauge from Teltek can be programmed to turn an auxiliary fan on and off at preset temperatures. All Teltek's gauges use a single telephone-type cable that plugs into the back of the gauge for power and to transmit the correct information to the gauge.

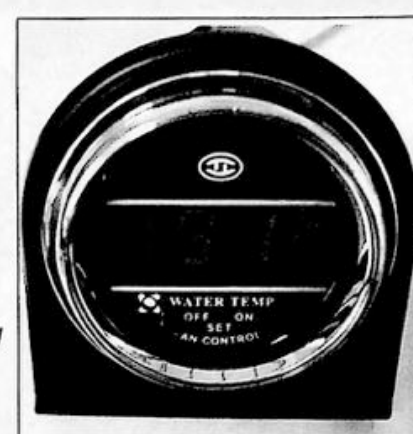
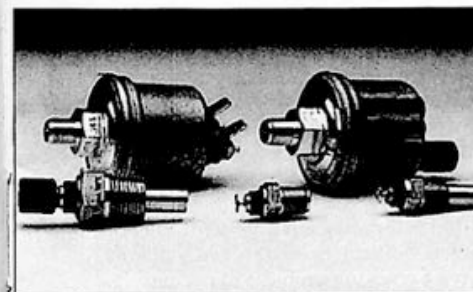


PHOTO COURTESY OF TELTEK USA

display that number. The accuracy in our gauges is plus or minus 1 degree on the temperature gauges.

"In the case of our oil-pressure gauge, that kind of accuracy is important. I just saved a motor that I spent four years building. I had an oil blockage in the pickup tube in the pan. When I started it, I had lots of oil pressure. When I revved it up, it dropped down to 9 pounds. Our digital gauge displayed it, whereas an analog gauge would not have picked up my problem as fast as the digital one did. I saved my motor, but I had to replace some bearings. The drop in oil pressure got to the bearings that fast. If I had kept driving, I would have trashed the motor.

"Our gauges are extremely accurate. There are many digital gauges on the market. They are not necessarily accurate, but people believe they are. The key is in the sensor and the microprocessing. The gauge is a readout instrument. We take a signal from the sensor and convert that to a microcontroller or a microprocessor to calculate what that reading really is. The sensor for our oil-pressure gauges costs \$50. The standard automotive oil-pressure sensors are \$5 or \$10. We tried to design a cheaper sensor, but there was no way we could do it and get the accuracy we wanted."



The key to the accuracy of the gauge lies in the quality of the pressure and temperature senders. Some senders cost \$1, while others go for \$50. Guess which one is more accurate?

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## HIGH-END GAUGES

Johnson adds, "Our digital display will not wash out in the brightest sunlight. We don't have a wire that goes to a 12V light switch so that when you turn your lights on, it dims the gauge lights. We have a photo transistor in there that looks at the ambient light and adjusts the display accordingly. So, in bright sunlight, the displays are extremely bright. As the sun starts to set, the displays gradually dim down to a comfortable level at night. It is all automatic. We are doing something different from anybody else with our backlighting. In the daytime, you can identify your gauges with the white printing. At nighttime, the logo and the gauge identification light up white. We use a white LED light that is expensive but gives a unique look to the gauge.

"There are no wires hanging out of the backs of our gauges. The sensor lead plugs into the back of the gauge. There are no wires inside our instruments. It is all computer boards. Our stuff is high-end and our price reflects that. We have a lifetime warranty.

"Will a guy pay \$149 for an oil-pressure gauge? If you spent \$10,000 on a motor, what is another \$150 to protect it? That is not even an issue to me if I know the gauge is accurate."

## SUBHEAD?

Johnson hits home on two topics: cost and appearance. Some kit car builders are traditionalist in wanting to exactly replicate great cars. There is also an innovative segment of the market. They build cars that are new designs. All builders want to put a little bit of themselves in their creations. One area of personalization is in the interior, and the choice of gauges allows for that individuality.

Each of the manufacturers offers different-looking gauges. Sometimes the color of the dial face and the bezel or the size and shape of the gauge is

different. A number of companies use an all-in-one concept where three or four gauges are built in one big gauge. The choices are endless, but always remember to demand accuracy. After all, looks are important, but the purpose of the gauge is to protect your expensive engine.

KC

### Auto Meter Products Inc.

Dept. KC  
413 W. Elm St.  
Sycamore, IL 60178  
815/895-8141  
www.autometer.com

### Classic Instruments Inc.

Dept. KC  
1299 M-75 S.  
Boyne City, MI 49712  
800/575-0461

### Dakota Digital Inc.

Dept. KC  
3421 W. Howland Dr.  
Sioux Falls, SD 57107  
800/852-3228  
www.dakotadigital.com

### Nordskog Performance Products

Dept. KC  
1120 Yarnell Pl.  
Oxnard, CA 93033  
805/483-2411  
www.intellitronix.com

### Stewart-Warner/Maxima Technologies

Dept. KC  
4325 Motorsport Dr.  
Concord, NC 28027  
www.stewartwarner.com

### Teltek USA Inc.

Dept. KC  
E. 22910 Appleway  
Liberty Lake, WA 99019  
800/TEL-TEMP (800/835-8367)  
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### VDO Performance Instruments

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188 Brooke Rd.  
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Large, open-spoke wheels highlight the brake components. Do not give up performance for looks.

# Looks Can Kill

**The keys to a good brake system are in safety, not style**

*text by Robert Eckhardt*

**T**he latest thing in aftermarket brakes for street vehicles is the racing look. With the advent of larger-diameter, open-spoke wheels, the brake calipers and rotors are now extremely visible. To dress up the car, street enthusiasts install larger-diameter, cross-drilled rotors and bigger calipers, giving the car a racing look. The question the kit builder must ask is, "Are we giving up braking performance for cosmetics?" If the answer is yes, it could be a deadly mistake.

Of all the parts of a vehicle, the brake system has the most to do with safety. If you have the wrong camshaft or carburetor, the worst that can happen is your car may not run to its potential. If the brake system is not at its optimal level, however, there can be dire consequences.

When upgrading brakes, you must

look at the total system. The ultimate stopping power comes from selecting the proper components for the system. It begins with the brake-to-pedal ratio, then goes to the master-cylinder sizing and the proper balance of calipers front to rear. It includes the correct size and type of rotor and concludes with the selection of the brake-pad material. You can also add in brake fluid and steel-braided brake lines to complete the system. All of the pieces must work together, or the only way you will stop is by running into something.

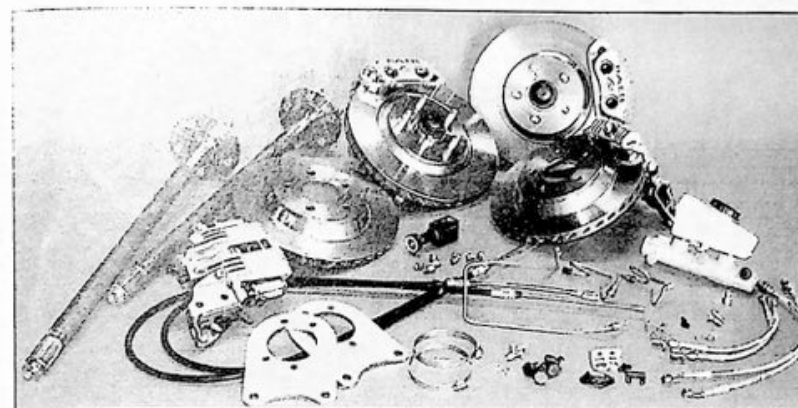
In this article, we will address only the components located at the wheel. These include the rotor, the caliper, and the brake pad.

## THE ROTOR

The racing look most hobbyists go for consists of large, vented rotors that are cross-drilled and slotted. Racers began drilling rotors in an attempt to make them lighter, thus lowering the rotating mass of the heavy rotors that added to the unsprung weight at the wheel. Lighter rotors make it easier to decelerate and accelerate the car. They

also lower the unsprung weight on each corner of the car for better handling. There is a limit, however, on how light to make brake components. Most racers have found that if they remove too much weight by drilling too many holes, the rotor doesn't have sufficient mass to absorb the heat produced by heavy braking. Therefore, the rotor temperatures increase faster than the heat can dissipate, and the surface temperature exceeds the interior temperature.

At every drilled hole, you have a high thermal gradient. That creates uneven expansion and contraction of the rotor, causing cracks. The reason cross-drilled rotors can be used successfully on high-performance street vehicles is that it is hard to repeatedly generate the extremely high heats found in a racing environment. Therefore, a well-engineered rotor should not have a cracking problem in normal street use. If the same vehicle is occasionally raced, however, the brake system will need more attention and maintenance. One thing most enthusiasts do not realize is that most race



Think of the brakes as a system, not as a collection of separate parts. Just bolting on a larger rotor may upset the balance of the entire brake system. Most companies sell complete packages that include the rotor, caliper, pads, brake lines, and mounting brackets. Do not try to build your own brake lines. With line pressures at or above 1,000 psi, factory lines are required.

components are inspected after every race and then replaced either after every race or at the end of the season. There is no such thing as a 40,000-mile race component—especially a brake component.

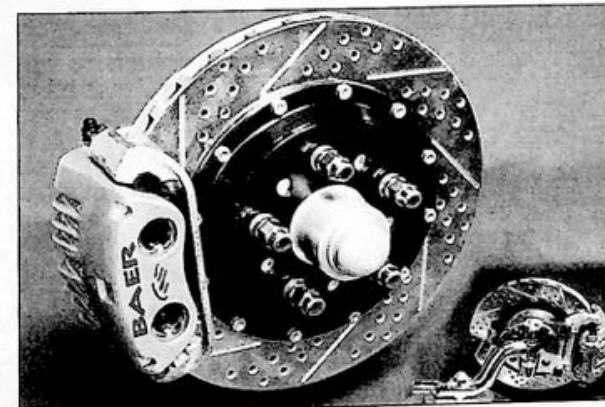
Carl Bush at Wilwood Engineering says, "For a drilled and slotted rotor to perform without failure, you need to start with a rotor that has enough mass to handle the heat once the holes are installed. As long as the overall rotor mass can still handle the heat, the holes should not present durability problems. There is a definite science to drilling and slotting a rotor. All Wilwood rotors feature a radius opening in each drill hole. A radius is far less likely to start a crack than a sharp corner or chamfer. Too many holes may take away too much mass and heat resistance. The hole pattern does play a part in heat distribution and pad wear. At Wilwood, the rotor hole patterns are computer-generated for mass distribution first,

then dyno-tested for actual heat distribution in the rotor."

## ROTOR TYPES

There are two types of vented rotors: straight vane and curved vane. A curved-vane rotor is structurally stronger than a straight-vane rotor. It produces more surface area than a straight-vane rotor, so it cools better. A curved-vane design also pumps more air through the rotor. The number of vanes and their thickness, length, and shape vary according to each manufacturer and the expected use of the rotor.

Another benefit of curved-vane rotors is the fact that most cracks want to run across the diameter from the inside to the outside. On a straight-vane rotor, a crack can conceivably go right up through the open section and break out a piece. The curved vane prevents those huge cracks from having any catastrophic failure.



Cross-drilled and slotted rotors look racy, but too many holes in the wrong place can lead to heat-stress cracks and a damaged rotor. For most street driving, this should not be a problem because the heat cycles are generally not high enough to cause damage. Weekend racing, though, can produce damaging heat.

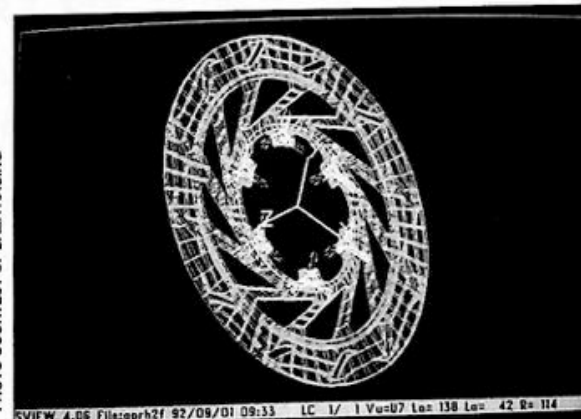
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The brakes stop the car by converting kinetic energy into heat energy. Heat is a blessing and a curse. High temperatures will increase stopping power to a point. Go over that point, however, and the brakes build excessive heat and fade away.

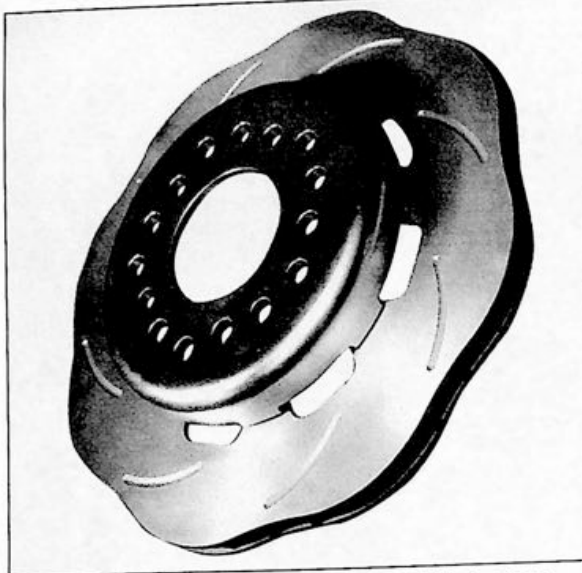
## LARGER LEVER ARM

When you upgrade the brake system with larger-diameter rotors, you increase the braking force by increasing the lever arm, which increases the torque linearly at the wheel. We asked Warren Gilliland of The Brake Man if a kit builder, by virtue of increasing the wheel torque with larger rotors, introduces a brake imbalance in the car. He explains, "It depends on the builder's understanding of how to rebalance the brakes for the front and rear. Upping the size of the rotor at the front and rear is fine, but you also have to understand that



Most of today's rotors are designed on computer-aided design (CAD) programs. The size of the holes and their locations, along with the placement and size of the vanes, dictate the quality of the rotor.





Most of the manufacturers use cast iron in their rotors. The Brake Man uses steel because it is more malleable and resists heat-stress cracking.

as you increase the size, you increase the deceleration rate.

"Most street stops are performed at between  $\frac{1}{2}$  g and  $\frac{3}{4}$  g. Coming down a freeway off-ramp hard, you are maybe up to  $\frac{3}{4}$  g. If you are going to performance-use the car—going through mountain roads and stopping a lot harder—you are stopping at  $\frac{3}{4}$  or  $\frac{1}{2}$  of a g. Now you are transferring a lot more weight to the front wheels. As you do so, you are forcing the front to assume more work and at the same time unloading the rear of the car. So you have to be careful how much you go up on the rear brakes, otherwise you can make the rear loose. The rear wheels start locking up and make the rear want to swap ends with the front.

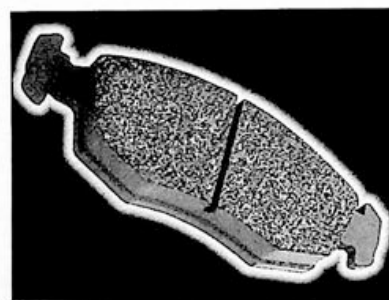
"You never want to go up in the rear until you have done something to the front. You never want to switch out discs for drums unless you have very carefully taken into consideration the brake force of the drum versus the disc. If you don't, you can throw the car out of balance."

### BRAKE BALANCE

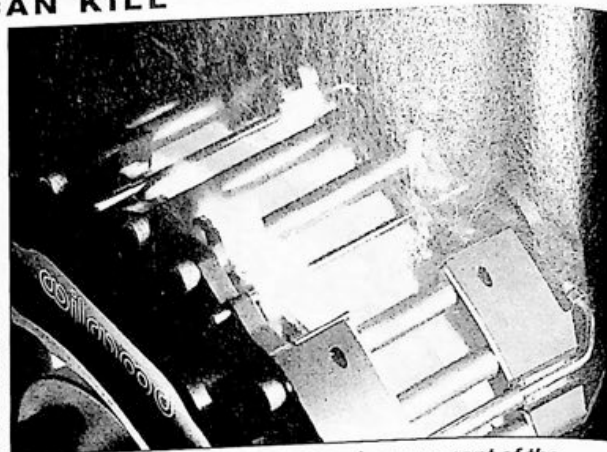
We asked Bush about maintaining the proper brake balance when upgrading the brake system. He explains, "There are a lot of other factors besides rotor size that affect the overall brake balance. Weight distribution, tire size, caliper piston volumes, and other mechanical components within the system can determine actual brake bias. On cars with front ABS, it can be self-healing. Factory proportioning valves and brake-pressure control blocks also assist with balance. If there was a choice for more brake bias in one

direction or another, I would always prefer more front brake. Too much rear brake can send the back of a car spinning in a panic stop. If the brake bias is in an out-of-balance condition, it is easy enough to install an inexpensive inline adjustable proportioning valve to fine-tune the balance on any given application."

Eric Dahl at Brembo North America agrees. "When sizing components and balancing front to rear, there are so many variables. Initially we need to know everything about the vehicle, including the overall weight of the vehicle, the wheelbase, how much weight is going to be loaded on each tire, and the location of the center of gravity. We have to know what is



Brake pads have different coefficients of friction. They also operate in different temperature ranges. It is imperative that the pad match the application. A pad designed for racing should never be used on the street. It will be too hard and operate at a much higher temperature. That means it will destroy your rotor, and the car will not stop until the right temperature is generated. By then, it may be too late.



Extensive testing ensures that each component of the brake system can withstand the heat. The newest brake pads have a higher coefficient of friction. They generate so much heat that the caliper manufacturers have developed different approaches for keeping the heat from transferring through the piston to the brake fluid. Some manufacturers use stainless steel heat shields to act as thermal blocks. Others ceramic-coat the inside of the caliper and the piston to insulate the brake fluid from the heat.

going to happen to this vehicle in a theoretical deceleration mode. We need to know how much weight is going to transfer from the rear up to the front. That is how we design a system.

"We need to know the size of the master cylinder and how the system is balanced. If you are transferring from drums to discs in the back, a lot of times you have to replace the master cylinder because you need to repropportion that system to get the proper line pressure for the rear calipers to function properly. You have to take into account how much brake torque you want on each axle. Braking torque is the theoretical load on the disc placed by a lever arm from the center where the piston contacts the disc to the axle itself. You want to create a balance between the front and rear.

"We developed a system where



If you are going to use racing components, realize that some maintenance may be required. The bridge bolts hold together the two halves of the caliper. If they loosen, the caliper will spread apart and lose braking force.

we produce a certain amount of torque on each wheel under a high-load situation. So, you are not locking up one tire too fast. You cannot just throw numbers at a car without knowing anything about it. Otherwise, you are just fitting the wheels.

"You can affect balance in two ways: line pressure or braking torque. You can combine both of those to create the right amount of braking force per axle. There is no set formula. It is variable by the vehicle application. Such things as where the engine is placed and the weight percent, front to rear per axle, make real differences in how a car behaves."

### THE CALIPER

There are two types of calipers: billet and cast. Which is best depends on the design. On one hand, a billet caliper tends to be stronger, but the open-bridge design may have a tendency to flex. On the other hand, some cast calipers are a little superior because of their design. It comes down to the caliper's size, the caliper's clamping force, and the piston size.

The caliper's rigidity and the overall piston area determine a caliper's clamping force. The caliper's stopping power is determined by how tightly it grips the rotor. If the caliper flexes under braking, some of the braking force is lost in the motion of the caliper. Stopping power is totally a function of piston area, not pad size. The piston area in the caliper determines the caliper's clamping force. To ascertain if a piston area is right for your application, calculate the area of all the pistons on one side of the

you increase or decrease the piston size on the front in relationship to the rear, you lose either way."

### CORROSION RESISTANCE

Gilliland makes a good point to remember when selecting calipers for street use. "With aftermarket calipers," he says, "the thing you have to consider is their corrosion resistance. If you are driving where the road is heavily salted, you want to consider products that have dust boots or high-quality coatings to protect against corrosion. It makes no difference if it is cast or billet at that point. Guys in California can get away with a lot more than guys in the East."

Dahl explains, "All of the calipers we sell are fully dust-sealed just like a factory caliper, as opposed to a racing caliper that requires rebuilding on a constant basis. The seal keeps road dust and grime out of the piston area so that the pistons are kept clean internally. These calipers require no special maintenance."

Bush adds, "Our calipers are corrosion-resistant and have O-rings that seal the pistons. We are starting to put on dust seals. It is more of a service issue. The dust seal—if it has not been eroded, corroded, or burned up—keeps the extended piston fairly clean so that you can push the piston back in when you are installing a new set of pads. If you don't have those types of dust seals on there and have been in a highly corrosive environment, it is better to clean the piston before shoving it back in the caliper. We have stainless steel pistons and anodized bodies. The seal materials are not affected by the road conditions. If you slid a bunch of debris

run in far more grueling racing conditions. It is there because it takes the customer out of the DOT mentality that they can put any part on their car and it will run great. Some parts sellers say a part came off a DOT-approved car so therefore it will be fine on a kit car or rod. Just bolt it on. So if we say this part is for racing only, the end user has to say, 'This is a custom part, and I may have to think a little bit about this installation.'"

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"As a general rule of thumb, first you should pick a front caliper that is applic-

according to rotor diameter. Everything else is that caliper. The a certain percentage of f the front caliper— 60 percent. Your s also sized according to If you choose a rear -falling into that -you don't need to ig the master cylinder use you have taken oosing the correct rear ith the front. ing rear drum brakes eed to find a rear smallest piston area r caliper has very n area from the ke's wheel cylinder. It ster-cylinder size at applications. We use d DBA rotors for most ems. In the four- and r systems and on the es, we use Alcon rs. It is OK to use

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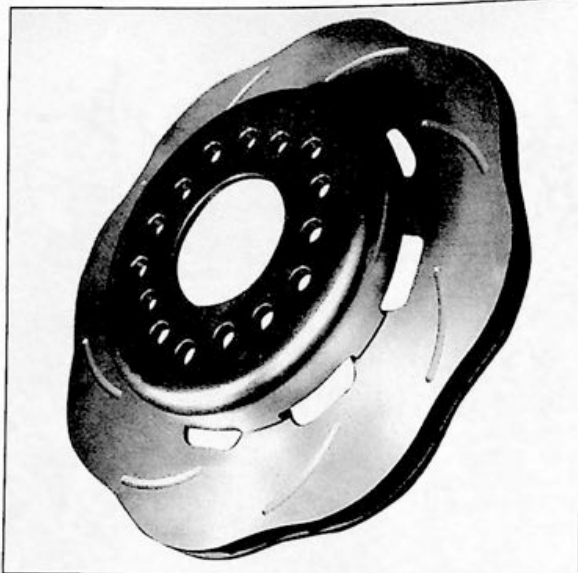
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Most of the manufacturers use cast iron in their rotors. The Brake Man uses steel because it is more malleable and resists heat-stress cracking.

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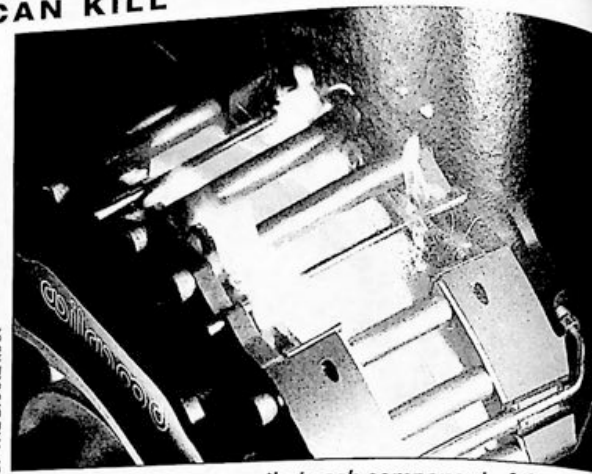


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Extensive testing ensures that each component of the brake system can withstand the heat. The newest brake pads have a higher coefficient of friction. They generate so much heat that the caliper manufacturers have developed different approaches for keeping the heat from transferring through the piston to the brake fluid. Some manufacturers use stainless steel heat shields to act as thermal blocks. Others ceramic-coat the inside of the caliper and the piston to insulate the brake fluid from the heat.

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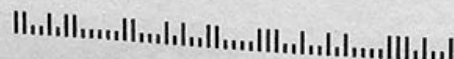
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Dahl adds, "For the street, you never need more than a four-piston caliper. It has become hip to have more pistons, but it is not really an advantage. Piston area is what really counts. Spreading the caliper out to add more pistons doesn't have as much to do with gaining piston area as it does with adding pad size. That is more of a racing-specific field. For the street, four pistons are more than adequate for any high-performance situation you can find. Do not add pistons just to add pistons. It doesn't gain you anything. If

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you increase or decrease the piston size on the front in relationship to the rear, you lose either way."

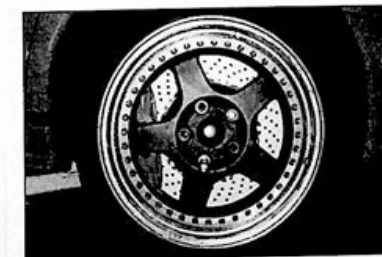
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"On most of our products it says 'For Racing Only.' The reason for that has nothing to do with their durability in a street environment, because they



Just because they make it doesn't mean you have to use it. Big, massive rotors are necessary on a Winston Cup car at Richmond, where the rotor temperatures see upward of 1,600 degrees. Huge rotors that fill large-diameter wheels increase the brake force and may unbalance the car and make it undrivable.

run in far more grueling racing conditions. It is there because it takes the customer out of the DOT mentality that they can put any part on their car and it will run great. Some parts sellers say a part came off a DOT-approved car so therefore it will be fine on a kit car or rod. Just bolt it on. So if we say this part is for racing only, the end user has to say, 'This is a custom part, and I may have to think a little bit about this installation.'

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"As a general rule of thumb, first you should pick a front caliper that is applicable for the job according to rotor diameter and the car's weight. Everything else is designed around that caliper. The rear calipers are a certain percentage of the piston area of the front caliper—generally around 60 percent. Your master cylinder is also sized according to front caliper size. If you choose a rear caliper correctly—falling into that percentage area—you don't need to worry about sizing the master cylinder for the rears because you have taken care of that by choosing the correct rear caliper that fits with the front."

"When replacing rear drum brakes with discs, you need to find a rear caliper with the smallest piston area possible. Our rear caliper has very little difference in area from the factory drum brake's wheel cylinder. It doesn't affect master-cylinder size at all in most stock applications. We use PBR calipers and DBA rotors for most of our street systems. In the four- and six-piston caliper systems and on the high-end packages, we use Alcon rotors and calipers. It is OK to use

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## LOOKS CAN KILL

different suppliers, but everything needs to match. It is like building an engine. You have the intake manifold from one company and the camshaft from another. All of the components need to match to form a system, but they don't all need to be from the same supplier. That is why we call our packages 'brake systems' and not kits. They are engineered systems. We calculate everything into designing a system.

"We supply the master cylinder, brake hoses, brackets, and everything the customer needs to put it on. That way, we know the correct volume for the calipers being used. A lot of companies will sell you a caliper and rotor that will bolt to the spindle, but that is the least of your worries. You can do that by going to a wrecking yard and grabbing some rotors and calipers. However, you need to make sure it all works together. If you are doing a bone-yard conversion and converting rear drums to discs, you really need to also get the front brakes off the same car, because the factory designed the front and rear calipers to work together. This allows you to get the same engineering in the system. In a kit car, the front suspension can be from a completely different car than the rear. It is important that the calipers match."

### THE PADS

As noted earlier, it is piston area and not pad size that determines braking force. At the same time, selection of the right pad material is critical. Most of the new pad materials are not as detrimental to the rotors as the old semi-metallic materials were. The pad manufacturers are creating friction materials that transfer a little of that material to the rotor. This way, the pad is working against itself and not biting into the rotor.

Most of the brake manufacturers offer pads that have different coefficients of friction and that work at different temperature ranges. Ask

them which pad they recommend for your application. They know which is best because they designed their systems using specific pad compounds. Never use a racing pad on the street. Racing pads are designed to work at much higher temperatures, and until those temperatures are reached, the pad offers very little braking effect.

We asked Joseph Setto at EBC Brakes to explain the difference in the three pads the company offers. "We make our recommendations based on the thermal dynamics of the pad and the customer's application. The heat range generated in normal city and highway driving is about 300 to 400 degrees. If the driver is aggressive, has a lot of horsepower, or drives a heavy car, it can get upward of 600 to 700 degrees.

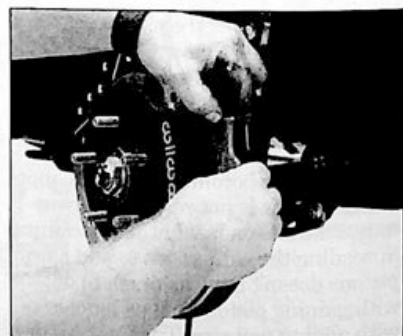
"For high-performance street and highway upgrade pads we recommend our Green Stuff. This is our bottom-of-the-line pad. It has a higher coefficient of friction—0.045—than some of the other pads out there. It has an operating temperature between 0 and 1,000 degrees F. These high-performance pads use an Aramid-fiber material that is very soft, so they do not score your rotors. It is a poly fiber with 4 percent copper content. The copper shavings draw out the heat from the rotor and minimize damage to the rotor caused by heat.

"We recommend our Red Stuff over the Green Stuff for street use if you drive a heavier or more powerful turbocharged car. In these applications, the pads tend to heat up more, especially in heavier vehicles with automatic transmissions. The Red pad needs to warm up to about 200 degrees before it kicks in and becomes a high-performance pad. It has a higher coefficient of friction at 0.036. The heat range is between 200 and 1,400 degrees. There is nothing bad about running the Reds on the street. It is just that it takes two or three miles to get to 200 degrees. We also recommend the Red Stuff for weekend racing or autocrossing.

"Racing pads on the street are an overkill, and they need a warm-up, which is not feasible in city driving. Our Yellow pads need to warm up to 400 degrees before they kick in. They will hardly have any braking before that. Those are definitely not for street use, just track use."

### EXCESSIVE DUST

Racing pads have a tendency to squeal and produce dust. They are built to work at higher temperatures, and when used on the street, they glaze over and squeal because the operating temperature is too low. All



**When replacing the brake pads, always wipe the outside of the piston clean before you push it back in the bore. That way dirt and corrosion will not erode the piston seal.**

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At left: This image of a Unique 427SC roadster in action speaks for itself. Photo courtesy of Car and Driver magazine

At right: Since 1996 you've seen this Viking Blue Unique 289FIA featured prominently in B.F. Goodrich's magazine ads and promotional posters! It was built (and is driven competitively) by Unique customer Bob Shaw of Santa Ana, California.



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For Unique's Factory Tour & Track VHS video, send \$22.95 (for U.S. or Canadian delivery) \$28.95 for overseas.



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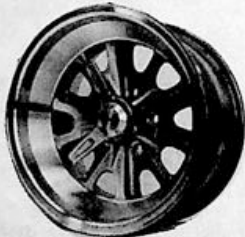
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Bolt on GT-40

15 or 17" S/C type



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## LOOKS CAN TELL

pads are designed to work within certain thermal ranges. If you have a pad on your car that was designed to work between 500 and 1,000 degrees on a race car, it is not going to work well on the street at 350 degrees.

Brembo uses only one pad compound in all its street applications. Dahl explains, "The pad that comes with the kits right now is the SM 1000. We use the coefficient of friction in this pad as the factor in balancing our systems. It is not a low-dust pad. One of the trade-offs for an aggressive and/or high-performance pad is generally dust. This pad will maintain a high coefficient of friction from cold temperature all the way up to 700 degrees C, as opposed to a street pad that will fade out well before 500 degrees C. This is a good midrange pad (between a low-performance and a full-race pad). Generally, 400 to 500 degrees C is running pretty hot in a street vehicle. That would be coming down a canyon road with some spirited driving. No one will ever see 700 degrees C on the street. It would be pretty ugly if they did."

The importance of using the correct-heat-range pads cannot be stressed enough. Using the wrong-heat-range pads alone can make a good system perform very badly.

When purchasing brakes for your favorite ride, think "system"—and remember that stopping is more important than acceleration and looks, especially when you need it the most. **KC**

### Baer Racing

Dept. KC  
3108 W. Thomas Rd., Ste. 1201-Q  
Phoenix, AZ 85017  
602/233-1411  
[www.baer.com](http://www.baer.com)

### The Brake Man

Dept. KC  
838 Calle Plano  
Camarillo, CA 93012  
805/987-7867  
[www.thebrakeman.com](http://www.thebrakeman.com)

### Brembo North America

Dept. KC  
1585 Sunflower Ave.  
Costa Mesa, CA 92626  
714/641-5831  
[www.brembo.com](http://www.brembo.com)

### EBC Brakes USA

Dept. KC  
806 Buchanan Blvd., No. 115-256  
Boulder City, NV 89005  
702/293-3332  
[www.ebcbrakes.com](http://www.ebcbrakes.com)

### Wilwood Engineering

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Camarillo, CA 93012  
805/388-1188  
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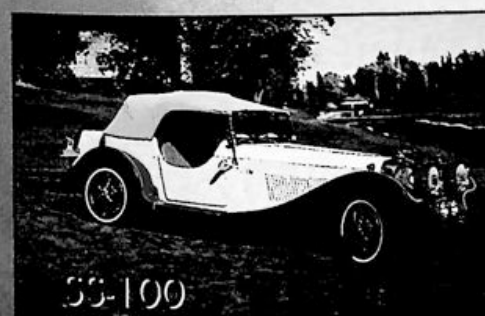


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remarkable  
cars live  
again.



33-100



XK-120



Considered by many to be one of the most beautiful cars ever built and a car with character and personality as well, the '34 Mercedes-Benz 500K was the epitome of wealth and success in the '30s. Except for Rolls Royce, more Mercedes-Benz cars were imported to the United States during the '30s than any other car.

The first K-series Mercedes-Benz was built from 1924 to 1926. In 1927, the Model S was introduced, and in 1932, the 500K Model was first offered. Sometimes described as handsome and

sinister, the sweeping lines of the 500K made it look fast even when standing still. The 500 comes from the decimeter displacement of the 5,018cc, straight-eight, 160hp engine. *K* stands for *Kompressor*, the German word for supercharger.

While it was one of the largest cars on the road and very heavy, it still had a top speed of just over 100 mph—very fast in the early '30s. One comment made during a road test at the time was: "When you floor the accelerator, the car becomes a wild beast. As the blower

engages, an almost demoniacal howl comes in; the rev counter and speedometer needles leap around their dials."

Like contemporary cars from Mercedes-Benz, the M-B 500K was solid and dependable with outstanding engineering—just the sort of car that a young engineer in the '50s might have longed for. Enter electrical engineer Ed Horton, a man looking for a personable car to add character to his retirement.

New Jersey resident Ed Horton was brought into kit cars during a restoration. Ed says, "I was in the process of

restoring a Jaguar XK120. All of the mechanical and body repairs were complete, and only a fresh coat of paint remained to complete the Jaguar. On an unusually warm day in January, 1995, my wife, Marie, and I decided to take the car for a spin before going to the paint shop. Returning home from our ride, we were rear-ended by a pickup truck while waiting to make a left-hand turn.

"We were seriously hurt and hospitalized for a while. While I was recuperating, I looked into fiberglass kit

bodies to replace the body of the Jaguar. But Marie said that if I wanted her to ride with me, I'd have to get something more massive that would provide more protection. So that was the end of the Jag."

Soon Ed discovered the '34 Mercedes-Benz 500K replicar offered by Heritage. At the '95 Carlisle Kit Car Nationals, Ed and Marie were walking through the fairgrounds when they spotted a maroon Heritage 500K for sale. They talked with the owner, took the car out for a testdrive, and bought the car that day.

Ed and Marie's Heritage Mercedes-Benz 500K was built in 1989, using the front subframe from a '72 Camaro and a small-block 350 Chevy engine bored out to 390 ci. The midsection of

the frame is a steel double-box that was part of the Heritage kit. The three-speed Turbo-Hydramatic transmission and the rear suspension are also from a '72 Camaro, and the body of the 500K is made of high-quality fiberglass. York Sports Cars of Ashland, Virginia, assembled the car and first licensed it in April 1990, though the car's registration lists it as an "89 Reconstructed Mercedes-Benz." It wears an inspection sticker on the windshield that reads, "Limited-Use Historic Vehicle."

The Hortons enjoy their classic replicar and show it off at junkets with the New Jersey Replicar Club, which they joined in 1995. Their 500K has been a consistent winner in local car shows, and Ed says, "We love to drive around South Jersey country roads with the top down, listening to music from a bygone era when cars had personalities all their own. This car has personality-plus, is fun to drive, and looks like a million bucks." That sounds like a reason for enjoying the kit car hobby to us.

KC

**Heritage Club International**  
Dept. KC, 655 E. Main St.  
Brownsburg, IN 46112  
317/858-8906

## Retired electrical engineer Ed Horton gets all the character he needs from his Heritage Mercedes

text and photos  
by K. Scott Teeters



The bored-out 350 small-block Chevy engine is reliable and makes more power than the original supercharged Mercedes-Benz.



The warm tan interior and black-on-white gauges help create a friendly place to spend sunny afternoons cruising through South Jersey farmlands. The Mercedes-Benz insignia on the horn button is a nice touch.



PERSONALITY  
PLUS

The '34 Mercedes-Benz 500K may have one of the longest hoods ever made on a roadster automobile.



# Non-Stretch Lambo

The Euro-Works Mirage X mounts on a Fiero with no chassis modifications  
text and photos by Mike Blake

Normally, when you want to build a Lamborghini in kit car form, you have to find a Fiero chassis on which to base it. You know you'll have to stretch the platform to make the shell fit and to give it that sleek Lambo look. Now, however, Euro-Works has designed its Mirage X, a Lamborghini Diablo-inspired kit that fits perfectly on a short wheelbase—a non-modified stock Fiero platform.

Archie Leopardi, a business owner from Montreal, had been reading magazines about kit cars for five years when he decided to get involved in the hobby. He got involved in a big way, first by building a Contemporary Cobra, and then, when the Lambo bug bit him, by moving on to the Mirage X. We saw this standout piece of automotive art at last year's Carlisle Kit Car Nationals, where it constantly drew crowds of admiring onlookers.

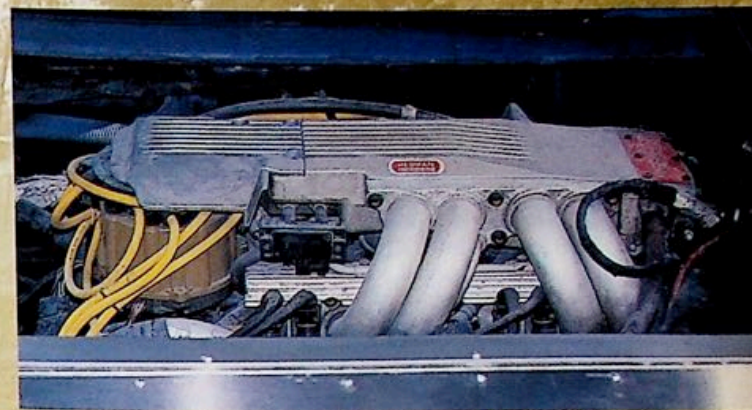
Fitted on a stock '87 Fiero frame, the Euro-Works Diablo-inspired Mirage X body fits nicely and looks sleek, despite its relatively short 93½-inch wheelbase, ranging from 5 to 11 inches shorter than most stretch versions of the genre. The frame was modified with additional structural steel for greater strength, but the rest of the platform is stock. A 1½-inch square-tube rollbar was added for safety.

It took Archie only four months to complete the build—thanks to his Cobra-building and Fiero-modifying experience—and when Archie decided on a platform donor, he definitely understood the concept of donor. The

Fiero on which his Mirage X sits was harvested fully. The rear shocks and springs, brakes, suspension, wheeltubs, manifold, transmission, and ignition are all stock Fiero, as is, of course, the non-stretched frame.

The biggest adjustment Archie made was under the hood, where he replaced the stock Fiero V-6 engine with a gutsy and powerful '91 Corvette 350 V-8 that churns out some 380 horses. He installed Hedman headers and Pigeon mufflers and added custom motor mounts and flywheel from V-8 Archie (no relation) as well as aluminum Corvette heads.

The sexy Lambo-type body was painted DuPont '99 Ford Blue by Brazeau Design in Montreal, the same company that designed the body shell for Euro-Works. The exterior is complemented by navy-blue carpet and vinyl upholstery on custom seats. Brazeau finished the interior and completed the wiring.



Under the hood, Archie replaced a stock Fiero V-6 engine with a powerful 380hp '91 Corvette 350 V-8. Aluminum Corvette heads, custom motor mounts and flywheel, Hedman headers, and Pigeon mufflers round out the powerplant.



The sexy Lambo-type body was painted DuPont '99 Ford Blue by Brazeau Design in Montreal, the same company that designed the body shell for Euro-Works. The gullwings are what set this car apart from other super-cars, and at the Carlisle Kit Car Nationals where this feature was photographed, it was difficult to keep the crowd away.

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The dash is a custom Euro-Works design accompanied by Autometer gauges, and the steering wheel is a custom Euro-Works feature. For entertainment, Archie added an Alpine sound system with four speakers.

The rubber sits on 17x8½-inch wheels in front and 17x12s behind. Archie finds that P235/40R17 tires do nicely in front, with larger P315/35R17s behind.

When asked how fast this Lamboesque car can go, Archie smiles and says, "Top speed? How much guts do you have?" Of the 3,000 miles a year Archie drives this blue beauty, we believe that the 1,000 miles he spends on the track are real show-your-guts miles at triple-digit speeds.

Archie moved from Snake to Lambo just for the fun of it. He says, "The joy of building kit cars is half the fun—the other half comes from driving them. You don't see many Lambos around in Canada, certainly not many Diablos, and 90 percent of the public has no idea that this is a kit car."

When asked why he chose a non-stretch version that doesn't have all the characteristics of longer, sleeker, stretch Fiero Lamborghini replicas, Archie says, "The Fiero was a great-handling car. I have driven Fiero-based kits and all have handled well in their stock configurations. I didn't want to mess around with GM's engineering and interfere with solid road-hugging. Besides, I don't think stretched chassis handle as well; the stretch Fieros I have driven feel 'long' in the back. I also think that this shorter version is even more appealing to the eye than the longer model."

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## NON-STRETCH LAMBO

Euro-Works manufactures three Lamborghini versions, the Mirage K, the Mirage X Diablo (short wheelbase), and a stretch version Mirage S (for those who demand exact Lambo specifications). Archie chose to go with the non-stretch Diablo.

Archie loved the car, but eventually felt it was time to move on. "The car was fun to drive and much more comfortable than my Cobra," he says. "But here in Quebec, we only have a six-month driving season, and I can't drive the Cobra and the Lambo at the same time, so when a U.S. car dealer made me an offer I couldn't refuse, I sold it. The car was complete and I sold it without remorse...but on sunny days

such as this one," he says, looking out at the Quebec countryside, "I really do miss my Diablo. I enjoy driving my Cobra, but I really did enjoy the Diablo much more."

Where does Archie go from here? "The next thing I have in mind is a Miata conversion with an aluminum V-6 supercharger. I am looking for the right conversion, then it should be a fun build and it will go fast!"

We don't doubt that it will, nor that he'll have as much fun driving it as we'll have watching it. If it is anything like this Euro-Works Mirage X Diablo, it should create as much attention in the Great White North of Canada as his Lambo did last year in Carlisle.

KC



The Fiero on which this Mirage X sits was harvested fully. The Fiero donor supplied the non-stretch frame as well as its stock rear shocks and springs, brakes, suspension, wheeltubs, manifold, transmission, and ignition.



Fitted on a stock '87 Fiero platform, the Euro-Works Diablo-inspired Mirage X body retains a sporty look despite its relatively short 93½-inch wheelbase, ranging from 5 to 11 inches shorter than most stretch versions of the genre.



Navy-blue carpet and custom seats fitted with vinyl upholstery set the interior tone. The custom Euro-Works dash is accentuated by Autometer gauges and a custom Euro-Works steering wheel. An Alpine sound system with four speakers finish off this classy cockpit.



Archie built this luxurious Lambo because, "You don't see many Lambos around in Canada, certainly not many Diablos, and 90 percent of the public has no idea that this is a kit car."

Montreal-resident Archie Leopardi built this Fiero-based Euro-Works Mirage X Diablo in just four months. He says, "The joy of building kit cars is half the fun—the other half comes from driving them."

Euro-Works Ltd.  
Dept. KC, 3771 Eileen Rd.  
Dayton, OH 45429  
939/293-6834  
www.euroworksltd.com





# Kit and Component Car Buyer's Guide



by the staff of Kit Car magazine

As the new-car season for production cars begins in Detroit and Tokyo, we felt it appropriate to offer our Kit Car Buyer's Guide during the same buying season. This allows hobbyists to begin thinking about purchases now in the hopes that our projects will be completed by the spring thaw and ready for that first romp on the highway.

Keeping this in mind, we present our largest and most comprehensive buyer's guide ever with 225 different manufacturers and some 380 kits and turnkeys offered on the kit, component, and replicar market. Ford has followed the kit car industry's lead by getting back into the nostalgic-car business; it is designing prototypes, concept cars, and production models of the Thunderbird (an '02-production model), the GT40 concept car that could be available for the '04 model year, and Cobra on course for the '03 Detroit Auto Show. Some of the replicar designs listed on the following pages might be blueprints of tomorrow's production cars, as we have also seen several other big production-car companies link nostalgia to their "new models."

With many original designs being created and marketed in

the kit car genre, perhaps some day Detroit and Tokyo will copy our industry and conceptualize the Birkins, Cheetahs, Cyclones, Dragons, Evoluciones, Gatsbys, Kurtises, Mullinses, Rodsters, Tipos, and other novel ideas and approaches created by the companies listed here.

Please use the following directory only as a guide. It makes sense for you, the kit car buyer, to call the manufacturer, do the research, and enjoy the entire project from the investigation phase to the finished buildup to that first drive in your car. Call the companies before you decide to purchase, as most have declined to list prices—which, in many cases, are negotiable and depend on various customizations that your kit or component car will have. Additionally, prices are subject to change and may have moved up or down since we went to print. Call your local kit car clubs; check out their Web sites; talk to knowledgeable kit car hobbyists online; contact satisfied-customers lists provided by the manufacturers; and talk to the companies listed in this guide before making any buying decision.

Enjoy your project and feel the pride and exhilaration created by your new kit or component car.

www.kitcarmag.com

**A&M Sports Cars**  
79 Hemingway Dr., Dept. KC  
Washford, ME 04082  
Redditch, Worcestershire, B98 0EA U.K.  
011/44-1527-510-483  
Manufactures EX2 kit  
EX2: kit - \$8,300; turnkey - \$21,000

**ACE Cobras**  
21422 Parthenia Ave., Dept. KC  
Canoga Park, CA 91304  
818/885-5097  
Cobra replicas

**Affiliated Motors**  
1700 Indian Hills Dr., Dept. KC  
Sioux City, IA 51104  
712/239-1206  
Manufactures Fiero-based Ferrari 288 GTOs

**Affordable Company**  
East Rd., Dept. KC  
Hampstead, NH 03841  
978/373-7389  
Exotic kit manufacturer  
308 GTSL: kit - \$9,995; turnkey - \$18,000  
'23 T-bucket: kit - \$9,950 minus drivetrain  
Mercedes 500 SL: kit - \$9,995; turnkey - \$18,000  
TR 512, 512 Koenig: kit - \$10,795; turnkey - \$19,500

**Alamo Sportscars**  
3107 Broadway, Dept. KC  
San Antonio, TX 78209  
210/824-5390  
www.alamosportscars.com  
Distributor of the English Westfield roadsters on Westfield tubular frame chassis  
Westfield: kit - \$17,646; starter kits available

**American Custom Engineering**  
160 Brice Pl., Dept. KC  
Durango, CO 81301  
970/259-4156  
Fiero engine conversions and kit bodies

**American Fiberbodies International**  
640 Hawkins Rd., Dept. KC  
Xenia, OH 45385  
937/372-4900  
Manufactures replica kits and turnkeys including Cobra, Diablo, Testarossa, 5000S, and R390  
Cobra: kit - \$2,995; turnkey - \$30,000  
Diablo: kit - \$5,500; turnkey - \$35,000  
Testarossa: kit - \$4,000; turnkey - \$26,000  
5000S: kit - \$5,000; turnkey - \$35,000  
R390: kit - \$39,900; turnkey - \$80,000



**Antique & Collectible Autos Inc.**  
35 Dole St., Dept. KC  
Buffalo, NY 14210  
800/245-1310, 716/825-3990  
www.acautos.com  
Manufactures Cobra 427, Jaguar XK120, '41 Willys, SS-100, and '34 Ford replicas  
Cobra: kit - \$13,995; turnkey - \$29,000  
Jaguar XK120: kit - \$8,995; turnkey - \$20,000 and up  
www.kitcarmag.com

**ASPP Inc.**  
740 Main St., Dept. KC  
Superior, AZ 85273  
520/689-0100  
Manufactures Fiero-based GT40 conversion kits and Cobra 289 FIA and 427 kits  
GT40: kit - \$6,998; turnkey - \$14,000 plus Fiero donor

**Automobile Atlanta**  
505 Marietta Pkwy., Dept. KC  
Marietta, GA 30060  
770/427-2844  
9014 kit car manufacturer for Porsche 914s

**Avanti Motors Inc.**  
106 Temple St., Dept. KC  
Villa Rica, GA 30180  
770/456-0900  
www.avantimotors.com  
Builds Avanti replicas based on Firebird chassis

**Balashi Autoworks & Carriage**  
635-A Gator Dr., Dept. KC  
Lantana, FL 33642  
561/585-9334  
Manufactures Countach replicas  
Countach: kit - \$6,995; turnkey - \$29,950

**Ballistic Auto Designs**  
5 Jackson Ave., Dept. KC  
Des Moines, IA 50315-1224  
800/806-5313  
Manufactures '30s-esque Willys/Wrangler conversions  
B.A.D. Jeep: kit - \$7,995; turnkey - \$32,000



**B&B Manufacturing**  
9940 Raccoon Rd., Dept. KC  
Granby, MO 64844  
417/472-3547  
www.cobracountry.com/bbmfg.html  
www.bandbroadster.com  
Cobra 427 roadster and '34 Ford replica manufacturer  
Cobra: kit - \$6,500; 5.0 Stage III - \$12,995; turnkey - \$28,500

**B&C Fiberglass Co.**  
RD No. 5, Box 77, Dept. KC  
Indiana, PA 15701  
724/349-2076  
Manufactures '32-'34 Ford fiberglass coupe replica bodies



**Beck Development**  
P.O. Box 291681, Dept. KC  
Phelan, CA 92329-1681  
760/949-0227  
Manufactures Lister and Porsche Spyder kits and turnkeys  
Lister Knobbly: kit - \$14,900; turnkey - \$40,000  
Spyder: kit - \$14,900; turnkey - \$21,500

Note: All addresses, contact numbers, Web sites, and prices listed were accurate as of the time we went to print and are subject to change. Call the manufacturer to verify current pricing.



# KIT AND COMPONENT CAR BUYER'S GUIDE

## Bennett Automotive

3385 Enterprise Ave., Dept. KC  
Hayward, CA 94545  
510/782-0705  
Builds Cobra 427 replicas on original-design tubular semi-space chassis  
Cobra: kit - multiple pricing per option; turnkey - \$60,680

## Berlinetta Motorcars Ltd.

P.O. Box 976, Dept. KC  
Huntington, NY 11743-0976  
516/423-1010  
Builds Ferrari 308 kits and parts

## BGW Spectre Ltd.

2534 Woodland Park Dr., Dept. KC  
Delafield, WI 53018  
414/646-4884  
Builds VW-based rod kits, pickups, and Wrecker and Speedster kits

## Big Boys Affordable Toys

P.O. Box 51088  
25 Peel Centre Dr., No. 111, Dept. KC  
Brampton, Ontario, Canada L6T 5M2  
905/790-7686  
Manufactures 427 Cobra replica kits

## Birchwood Automotive Group

10205 Wooster Pike Rd., Dept. KC  
Creston, OH 94217  
330/435-6347  
Builders of the Holley '32 Ford



## Birkin/America

P.O. Box 120982  
1212 N. Davis, Dept. KC  
Arlington, TX 76012  
817/461-7431  
www.birkinamerica.com  
North American importer of Lotus 7 replica Birkin kit cars on Birkin  
aluminum-skin space-frame chassis  
Birkin S-3: kit - \$10,824; rolling chassis - \$17,904; race version - \$16,976

## Boyd Coddington's Garage/Image Auto Works

77-585 Enfield Ln., Ste. B, Dept. KC  
Palm Desert, CA 92211  
866/33-BOYDS, 760/200-5882  
www.imageautoworks.com  
Manufactures new Cobra 427 C/I roadster; Boydster I,  
Boydster II '32, and new Boydster III '33  
Cobra 427 C/I: kits and rollers - call for pricing  
Boydster I: body and chassis kits - starting at \$13,400;  
turnkey - call for pricing  
Boydster II: body and chassis kits - starting at \$15,000;  
turnkey - call for pricing

## Braden River Engineering

1620 Palma Sola Blvd., Dept. KC  
Bradenton, FL 34209  
941/761-8498  
Builds Jaguar XKE kits using Mazda RX-7 platforms

## British Auto Shoppe

1909 Fifth Ave., Dept. KC  
Moline, IL 61265  
309/764-9513  
www.britishautoshoppe.com  
Builds and sells Birkins



## Brooklands Car Components

47 Forest Hill Dr., Dept. KC  
Kitchener, Ontario, Canada N2M 4G2  
519/745-2791  
www.noisette-software.com/brooklands/  
Manufactures Brooklands Renaissance, MGB, and  
Mustang-based kits and turnkeys  
MGB Conversion: kit - \$3,150; turnkey - \$19,900

## Brookville Roadster Co.

718 Albert Rd., Dept. KC  
Brookville, OH 45309  
937/833-4605  
www.brookvilleroadster.com  
Manufactures '28-'31 Ford highboy bodies in steel, '32 roadster bodies,  
'28-'31 Model A roadsters, and frames designed to handle late-model  
drivetrains

## California Advanced Vehicles (C.A.V.)

14805 Fisher Cove, Dept. KC  
Del Mar, CA 92014  
858/342-3246  
www.gt40cars.com  
Manufactures '66 GT40 Mk 1 designed to accommodate taller drivers  
without altering look, style, or exterior dimensions. Builds turnkey-  
minus kits to owner's specs

## Carcepts/Pacific Roadsters

17470 Walnut Grove Ln., Dept. KC  
Amity, OR 97101  
www.carcepts.com  
Manufactures 427 roadster, MJ-7 Jeep conversion kits

## Carolina Growler

824 Loblolly Dr., Dept. KC  
Vass, NC 28394  
877/615-1548  
www.carolinagrowler.com  
Manufactures Growler Wolverine series of off-road vehicles based on  
M151 military-truck drivetrain. Built in kit form with 12-gauge unitized  
chassis and body, meeting military criteria. Resemble Army jeeps. Also  
available in turnkey.  
Growler UV100 kit - \$7,500  
Wolverine 420 kit - \$9,950  
Wolverine 450 kit - \$11,250  
Wolverine 600 kit - \$12,500



## Caroselli Design

128 Center St., Ste. B, Dept. KC  
El Segundo, CA 90245  
310/322-2767  
www.rodster.com  
Manufactures Rodster—a Jimmy or Chevy S-10-based hot rod kit—and  
the Sedan Delivery  
Rodster: kit - \$4,395; turnkey - call for pricing  
Sedan Delivery: kit - \$2,995; turnkey - call for pricing

www.kitcarmag.com

## Carvee

1060 Jasper Ave. SW, Dept. KC  
Edmonton, Alberta, Canada T5J 3R8  
780/424-2202  
www.carvee.com  
Hummer-Vee replicas on 1/4-ton GM donors

## Cavaliere Cars

1298 Market Cir., Dept. KC  
Port Charlotte, FL 33953  
941/625-6363  
www.cavalierecars.com  
Manufactures '67 Austin-Healey 3000 replicas and matching trailers in  
turnkey form



## C-F Enterprises Cal Ace

P.O. Box 1347, Dept. KC  
Long Beach, CA 90801-1347  
562/404-0522  
www.calace.com  
Manufactures body-styling kits for MGB-based Cal Ace Cobra replica  
utilizing stock MGB roadster  
California Ace: kit - \$2,795

## Champion Motor Car Co.

105 AS Commerce Cir., Dept. KC  
Madison, AL 35758  
256/426-5786  
www.championmotorcars.com  
Builders of CMC 7 fully assembled and do-it-yourself kits  
and space-frame chassis



## The Chassis Shop

8040 S. Madison, Dept. KC  
Burr Ridge, IL 60527  
630/455-5024  
www.thechassisshop.com  
Builders of Mustang GT350 kits and turnkeys



## Classic Antique Replicar Specialist

C.A.R.S.  
10712 N. May Ave., Dept. KC  
Oklahoma City, OK 73120  
405/755-5522  
www.kitcar.com/dio  
Manufactures Dio Tipo 61 sports-car kits, a birdcage Maserati-type based  
on TR3, TR4, MGA, VW, and Datsun 1600 and 2000 donors or a  
C.A.R.S. custom tube chassis; and sedan delivery pizza trucks, the  
Diolivery, based on Blazer, Jimmy, and Chevy S-10 pickups  
Dio Tipo 61: kit - \$2,495; turnkey - \$37,500  
Diolivery: kit - starting at \$2,995; turnkey - starting at \$10,000 with  
buyer-supplied donor

## The Classic Factory

1454 E. Ninth St., Dept. KC  
Pomona, CA 91766  
909/629-5868  
Manufactures Ford LTD-based '35-'36 Auburn kits  
Auburn: kit - \$10,995

www.kitcarmag.com



## Classic Roadsters

1617 Main Ave., Dept. KC  
Fargo, ND 58103-1595  
800/373-9000  
www.classicroadsters.com  
Manufactures Mustang II-based Cobra 427 and Austin-Healey Sebring  
MX replicas and Hummer Rugged All-Terrain R.A.T. replicas  
Cobra 427: kit - \$13,850; turnkey - call for pricing  
Sebring MX: kit - \$12,995; turnkey - call for pricing  
R.A.T.: kit - \$9,995; turnkey - call for pricing

## Coach & Chassis Works Inc.

1445-A Babcock Blvd., Dept. KC  
Pittsburgh, PA 15209-1630  
412/821-1900  
Manufactures reproduction '34 Plymouths and Dodges



## Coast To Coast

238 Rte. Kennedy, Dept. KC  
Beauceville, Est., Quebec, Canada G5X 1P4  
888/600-0070, 418/774-2565  
www.ford39.com  
Manufactures '39 Ford roadster replicas, custom frames for Mustang II,  
and Corvette suspension; will build to suit

## Corbin Motors

2360 Technology Pkwy., Dept. KC  
Hollister, CA 95023  
831/635-1033  
www.corbinmotors.com  
Manufactures the Merlin roadster, a three-wheel design from the folks  
who invented the Sparrow

## Corvette Central

5865 Sawyer Rd., Dept. KC  
Sawyer, MI 49125  
800/345-4122  
Manufactures Corvette parts and a '57 Vette kit, the Concept 57  
Concept 57: kit - \$10,995 for the body, \$6,300 for the chassis

## Creative Safety

805 W. River Rd., Dept. KC  
Muskegon, MI 49445  
231/719-1911  
www.creative-safety.com  
Builds two-door S-Vee Hummer replicas



# KIT AND COMPONENT CAR BUYER'S GUIDE

## CRP

2364 Sturgis Rd., Dept. KC  
Oxnard, CA 93030  
805/278-7721  
www.crpdesign.com  
Manufactures Lambo replicas and other sporty models, including the roadster, in complete kits and turnkeys and V-12 conversions

## Custom Coach of America

4318 Litchfield Dr., Dept. KC  
Chesterfield, VA 23832  
804/240-8001  
www.customcoachofamerica.com  
Manufactures the Saturn SC-2-based Predator  
Predator: kit - \$3,000

## Custom Toys Ltd.

2017 Commonwealth, Ste. C, Dept. KC  
Fullerton, CA 92633  
714/680-9744  
Modern Mercedes replica kits, German SL, 512 TR, also F40s and Diablos

## Cyclone Motor Company Inc.

Glover Design  
1975 Stirling Rd., Dept. KC  
Dania Beach, FL 33004  
954/683-1253  
Manufactures Cyclone roadster with tubular space-frame chassis, generally powered by Chevy LS1 or LS6 engines or supercharged Buick 3.8L V-6s  
Cyclone kit: \$24,200 for complete car minus engine and transmission



## D&B Enterprises

2869 Lotzgesell Rd., Dept. KC  
Sequim, WA 98382  
360/582-0338  
Manufactures of '54 Maserati Barchetta replicas, with custom ladder-with-aluminum monocoque chassis  
Maserati Barchetta: turnkey - \$80,000

## D&D Corvette

1985 Manchester Rd., Dept. KC  
Akron, OH 44314  
330/745-2544  
Manufactures Grand Sport replicas

## D&R Replicas Inc.

525 Haycock Run Rd., Dept. KC  
Kintnersville, PA 18930  
610/847-2188  
Manufactures Python 2000, Diablo, and Deceptor kits  
Deceptor: kit - \$4,495; turnkey - \$35,000

## Deco Rides

P.O. Drawer G, Dept. KC  
14 Schooley's Mountain Rd.  
Long Valley, NJ 07853  
908/876-9100  
www.decorides.com  
Manufactures fiberglass rod bodies for '39 Lincoln Zephyr coupe, convertible, and sedan delivery, and Chip Foose-designed Auburn Boattail Speedsters

## D. J. Sportscars International

2 Edinburgh Pl.  
Edinburgh Way, Dept. KC  
Harlow, Essex CM20 2DJ, U.K.  
011/44-1279-442-661  
English manufacturers of Dax Rush, Cobra replica Tojeiro and Kamala  
Kamala: kit - \$32,000 with rolling chassis

## Downs Manufacturing

715 Main St., Dept. KC  
Lawton, MI 49065  
616/624-4081  
www.downsmfg.com  
Manufactures '37 Ford three-window coupes, '37 Ford truck kits, '34 Ford roadsters, and '32 Ford five-window complete bodies and parts



## Dragon Motor Cars

P.O. Box 858, Walker Rd., Dept. KC  
Grantham, NH 03753  
800/449-8611  
Manufactures the new Dragon, a '50s-'60s-style road racer that combines some Ferrari with Lister, Maserati, and Scarab, for '88-'96 Corvette chassis

## DuLoux Motors Ltd.

10493 Maranatha Pl., Dept. KC  
Grass Valley, CA 95949  
530/477-0707  
www.kitcar.com/cord; duloux@integrity.com  
Manufactures '37 Cord cabriolet replica kits and turnkeys, with custom chassis  
Cord cabriolet: kit - \$26,500; turnkey - \$59,000

## Dynamic Motorsports

2647 Morgan Ln., State Rte. 128, Dept. KC  
Ross,  
513/  
Man  
Birkir

## Eagle

760  
Buffal  
716/  
Man  
XK12  
SS10

## East

Box 8  
Hous  
713/  
Man  
GT: k

## Enco

P.O. I  
Monr  
734/  
Man



## ERA Replica Automobiles

608-612 E. Main St., Dept. KC  
New Britain, CT 06051  
860/224-0253  
www.erareplicas.com  
Manufactures Cobra 427 S/C and 289 FIA/USRR, GT40, and Corvette  
Grand Sport replica kits and turnkeys  
Cobra 289 FIA: kit - \$16,900; turnkey - \$36,000-\$45,000  
Cobra 427 S/C: kit - \$18,900; turnkey - \$46,000-\$65,000  
Corvette Grand Sport: kit - \$17,900; partially assembled - \$45,000; turnkey - call for pricing  
GT MK I: kit - \$49,900; turnkey - \$100,000-\$120,000  
GT MK II: kit - \$49,000; turnkey - \$120,000

## Euro-Works Ltd.

3771 Eileen Rd., Dept. KC  
Dayton, OH 45429  
939/293-6834  
www.euroworksltd.com  
Manufactures Fiero-based Mirage Countach kits; innovator of the first non-stretch Fiero-based Lambo; and American representative for K-1 Styling's Evoluzione and Attack, for Firebird and Camaro donors  
Mirage X: kit - \$9,995-\$12,995  
Mirage K: kit - \$4,995-\$7,995  
Mirage S: kit - \$7,995-\$9,995  
Evoluzione II: starter kit - \$7,995

## Eva Sportscars

1297 Pleasant Corner Rd., Dept. KC  
Vankleek Hill, Ontario, Canada K0B 1R0  
613/678-3377  
Manufactures Cobra 289 and 427, Diva Speedster and Roadster, and Aurora 289 kits with custom space-frame chassis  
Cobra 289 kit: \$11,995  
Cobra 427 kit: \$11,995  
Diva Speedster kit: \$9,995  
Diva Roadster kit: \$8,995



## Everett-Morrison Motorcars

13206 Byrd Dr., Dept. KC  
Odessa, FL 33556  
813/920-5499  
www.everett-morrison.com  
Full-service Cobra 427 S/C replica manufacturer  
Cobra 427 S/C: kit - \$14,676; turnkey - \$31,640

## Excellence Motor Carriages

C.P. 175, Dept., KC  
Victoriaville, Quebec, Canada G6P 6S8  
819/795-4482  
Manufactures Excellence Roadster and Phaeton kits and turnkeys  
Excellence Roadster: kit - \$8,500; turnkey - \$40,000

## Exotic Cars

96 N. Seventh St., Dept. KC  
Paterson, NJ 07522  
973/956-7570  
Sells dozens of exotic rebodies and replicas, including the VW Bug-based VW-Countach, the Fiero-based 25th Stretch Lambo replica, the Mongoose NS and 5000GT; the MR2-based 25th Roadster; the '74-'89 Lincoln-based B100 and D100 and Rolls Royce Update; the '82-'97 Camaro- or '85-'90 Cadillac-based X-Calibur; and the '88-'95 LeBaron-based 5000SL  
BIMR 3: kit - \$2,200; turnkey - \$20,000  
Countach VW: kit - \$4,500; turnkey - \$22,000  
Countach 25th: kit - \$6,000; turnkey - \$40,000  
25th Roadster: kit - \$7,999; turnkey - \$55,000  
Mongoose: kit - \$6,500; turnkey - \$38,000  
Mongoose GT: kit - \$6,000; turnkey - \$45,000  
Rolls Royce: kit - \$4,200  
5000GT: kit - \$4,500; turnkey - \$41,000  
5000 SL: kit - \$3,500; turnkey - \$24,000  
X-Calibur: kit - \$4,200  
B100: kit - \$4,500  
D100: kit - \$4,600



## Exotic Illusions Ltd.

Rear 347 Main St., Dept. KC  
Dickson City, PA 18519  
570/383-1206  
www.kitcar.com/exotic  
Manufactures Fiero-based fiberglass Countach replica kits and turnkeys  
Eurosex 1000 Countach: kit - \$5,500; turnkey - \$35,000 V-6, \$45,000 V-8  
Eurosex 2500 Countach: kit - \$5,500, deluxe kit - \$15,000; turnkey - \$40,000-\$50,000  
25th Anniversary Countach: kit - \$8,500

## Exotic Rebodies

273 Delta Waters St., Dept. KC  
Henderson, NV 89104  
702/340-0799  
www.exoticrebodies.com  
Manufactures Fiero-based Concept Carrera-GT, Ziata, 25th-anniversary Countach, X35, X40, and X50 kits  
ZT: kit - starting at \$2,295  
25th: kit - starting at \$4,495  
Diabolic GT: kit - starting at \$6,495  
Concept C-GT: kit - call for pricing



# KIT AND COMPONENT CAR BUYER'S GUIDE



## Factory Five Racing

18 Kendrick Rd., Wareham Ind. Park, Dept. KC  
Wareham, MA 02571  
508/291-3443  
www.factoryfive.com  
Manufactures SL Mustang-based '65 roadster kits, Cobra 427 S/C replicas, the new Mk II, Spec racers, and coupe Daytona replica kits and has mid-engine race car kit in the works. All are based on custom FFR chassis  
'65 roadster: kit - \$11,990  
Spec Racer: kit - call for pricing  
Coupe: kit - call for pricing

## Fairlane Co.

107 W Railroad St., Dept. KC  
St. Johns, MI 48879  
517/224-6460  
Builds fiberglass cars and classic-truck body parts, '35-'36 Ford bodies

## Fibertech Industries

249 N. Ben Franklin Rd., Dept. KC  
Indiana, PA 15701  
800/541-9402  
Manufactures HUM-J-7 basic body kits for Wrangler conversions  
HUM-J-7: kit - call for pricing; turnkey - call for pricing

## Fiero Conversions

3410 Walker Rd., Dept. KC  
Windsor, Ontario, Canada N8W 3S3  
519/972-4989  
Manufactures Fiero conversions and accessories

## Final Concept

12705 Tamiami Trail, Dept. KC  
Punta Gorda, FL 33955  
941/764-1966  
Manufactures Lamborghini Countach replica kits and turnkeys  
Final Vision 2000: kit - \$4,995; turnkey - \$29,995

## Frank Kurtis Co.

6631 Rivergrove St., Dept. KC  
Bakersfield, CA 93308  
661/393-7706  
Manufactures the '54 Kurtis 500S based on the race car original

## G&S Motorsports

75 Industrial Way, Dept. KC  
Buellton, CA 93427  
805/688-0600  
Cobra replica kits, turnkeys, engines, and parts  
Cobra 427: kit - \$16,900; turnkey - \$65,000

## Garage Pigeon Performance

1420 Rte. 125, Dept. KC  
Ste-Julienne, Quebec, Canada JOK 2T0  
450/831-2791  
Manufactures AC Cobras  
AC Cobra: kit - \$9,995; turnkey - \$49,995

## Gibbon Fiberglass Reproductions

132 Industrial Way, Dept. KC  
Darlington, SC 29532  
843/395-6200  
Bondracing@aol.com  
Manufacturer of fiberglass bodies and components, body and chassis packages, and turnkey hot rods since 1975. Builds '30-'34 Ford roadsters, cabriolets, '49-'51 Mercury convertibles, three- and five-window coupes, Tudor sedans and deliveries, convertibles, and roadster pickups  
'32 Ford roadster: rolling kit - \$13,800  
'33 Viper coupe: rolling kit - \$17,250  
'37 Club convertible: rolling kit - \$15,600  
Five-window coupe: rolling kit - \$17,250

## Gladney Brothers Motorsports

13327 Elliott Dr., Dept. KC  
Chino, CA 91710  
909/613-5800  
www.gbmustang.com  
Manufactures GB Mustang roadster, a high-performance street kit with a '60s-'70s look, built upon a Ford Fox chassis

## The Glass House

W. Arrow Hwy., No4, Dept. KC  
San Dimas, CA 91773  
909/592-1078  
Manufactures fiberglass kits for street rods, antiques, and special-interest cars

## The Glass Station

7107 Broadway, PMB 226, Dept. KC  
Lemon Grove, CA 91945  
619/460-2079  
Manufactures fiberglass Pro Street VW bodies  
Pro V: kit - \$5,995  
Pro V-8: kit - \$6,250

## Glover Designs

P.O. Box 350143, Dept. KC  
Fort Lauderdale, FL 33335  
800/493-6743  
Manufactures chassis, kits, and turnkeys  
Shaka Nynya: kit - \$25,000; turnkey - \$30,000

## Great Lakes Legends

130 Trinity St., Dept. KC  
Stratford, Ontario, Canada N5A4P6  
519/274-3850  
www.dreamcobra.com  
Cobra distributors for Shell Valley in Canada

## Group Five Ltd.

1025 W. First Ave., Ste. A, Dept. KC  
Mesa, AZ 85210  
480/610-1202  
www.viperparts.com  
Manufactures Corvette-based Cobra replicas  
Cobrette: kit - \$6,250; turnkey - \$29,500



## GSR Grand Sport Replica

767 Harrison Ave., Dept. KC  
Akron, OH 44314  
330/848-1488  
www.grandsportreplica.com  
Manufactures Corvette Grand Sport replicas

## GTD Replicas

2 Kingsbury Rd.  
Curdworth, Sutton Coldfield, Dept. KC  
W. Midlands B76 9EE, U.K.  
011/44-1675-475-706  
GTD is an England-based GT40 maker (a big player over there); exports to U.S.

## GTM Cars Ltd.

Trowell Ln., Sutton Bonington, Loughborough, Dept. KC  
Leicester LE 12 5RW, U.K.  
011/44-1509-852-646  
Makes the Libra, the Rossa K3, and the Midas Gold convertible and coupe; all kits are based on Rover/Metro components



## GT Motorsports

6893 Root Rd., Dept. KC  
N. Ridgeville, OH 44039  
440/327-6451  
Manufactures Mustang II-based Jaguar XKE kits and turnkeys on space-frame square-tube chassis  
Wildcat Jaguar XKE: kit - \$8,500; turnkey - \$20,000

## Gulf Coast Motors

390 Bay St., Ste. 705, Dept. KC  
Toronto, Ontario, Canada M5H 2Y2  
416/918-4555  
www.vitesseportscar.com  
Manufactures Vitesse body kit for Honda Civic  
Vitesse Cabrio: basic kit - \$4,500; deluxe kit - \$5,900  
Vitesse coupe: basic kit - \$3,500

## Handcraft Motorcar Co.

6805 Riverview Blvd., Dept. KC  
Bradenton, FL 34209  
941/794-2420  
Manufactures kits to transform Camaros into Testarossas

## Harrison Kits/Venom Custom

45 Paradise Rd., Dept. KC  
Slacks Creek, Queensland, Australia 4127  
61-07-3208-3224  
Manufactures Cobra replicas

## Harwood Industries

17824 State Hwy. 31 E., Dept. KC  
Tyler, TX 75705  
800/822-3392 order line  
Manufactures '32 Ford replicas and repro chassis

## Hawk Cars

Oakdene, Dept. KC  
Riverhall Hill, Frant, E. Sussex, TN3 9EP U.K.  
011/44-1892-750-341  
www.hawkcars.co.uk  
England-based builder of kit cars designed by the legendary Gerry Hawknidge. New 289 and 427 Cobra replicas recently made their debut to join line of Hawks. Also distributor for Kirkham Motorsports in Europe

## Hercules Motor Cars Co.

2502 N. 70th St., Dept. KC  
Tampa, FL 33619  
813/621-2220  
Manufactures new generation of woodie car-trucks

## Heritage AF Ltd.

1390 Panozzo, Dept. KC  
Kankakee, IN 60901  
815/933-7373  
Manufactures '53 Corvette replicas

## Heritage Club International

655 E. Main St., Dept. KC  
Brownsburg, IN 46112  
317/858-8906  
Manufacturer representing Mercedes Heritage 500 replicas

## Highland Racing

2170 Stonehouse Rd., Dept. KC  
Shepard, MT 59079  
888/718-8702  
www.hrcoupe.com  
Manufactures turnkey Daytona coupe replicas and 427 S/C and 427 FIA models

## Hi-Tech Motorsports

7901 E. Pierce St., Dept. KC  
Scottsdale, AZ 85257  
602/990-2442  
Manufactures 289 and 427 Cobra replicas and parts-cars on a shelf, rather than cars in a box

## House of Cobras-California

Cobra Connection  
1151 Armando St., Dept. KC  
Anaheim, CA 92806  
714/953-5352  
www.houseofcobras.com  
Builds turnkeys and sells various makes of Cobras

## House of Cobras-Midwest

1909 Fifth Ave., Dept. KC  
Moline, IL 61265  
www.houseofcobras.com  
Builds turnkeys and sells various makes of Cobras

## Hunter's Kit Car Manufacturing

2931 NW Eighth Pl., Dept. KC  
Ocala, FL 34475  
352/622-5659  
Manufactures Cobra replicas

## ICM Industries

2815 N. Lima St., Dept. KC  
Burbank, CA 91504  
818/832-1550  
Manufactures Porsche 911 reproduction kits

## Ida Automotive Inc.

No. 2, Rte. 9, Texas Rd., Dept. KC  
Morganville, NJ 07751  
732/591-1245  
Manufactures '33, '40, and '41 Willys coupes, bodies, and chassis and '48 Tucker replicas  
'33 and '41 Willys: kit - \$12,357-\$14,760; turnkey - call for pricing

## IFG/Warlock Designs

15740 El Prado Rd., Ste. B, Dept. KC  
Chino, CA 91710  
909/597-4110  
www.ifgonline.com  
Manufactures a wide range of exotic replica automobile kits, rolling chassis, and turnkeys, including Diablo, Interceptor, and Phantom  
Interceptor 25th: kit - \$7,000; turnkey - \$36,000 V-6  
Interceptor 5000: kit - \$5,000; turnkey - \$26,500 V-6  
Phantom VT: kit - \$9,000; turnkey - \$42,000 V-6  
Phantom roadster and SE: kit - \$12,000; turnkey - \$48,000 V-6



# KIT AND COMPONENT CAR BUYER'S GUIDE

## Image Motorsport Corp.

170 Blackford Ave., Dept. KC  
Piscataway, NJ 08854  
732/271-8512  
Imports British kit cars

## Indy Exotics Inc.

1551 Churchman Ave., Dept. KC  
Indianapolis, IN 46203  
317/784-1119  
Manufactures Cobra replicas, Auburn Speedsters, and '34 Ford coupe kits and turnkeys  
Auburn Speedster: kit - \$8,995; turnkey - \$47,000  
Cobra roadster: kit - \$8,995; turnkey - \$45,000  
'34 Ford coupe: kit - \$7,900; turnkey - \$27,000

## Innovations in Fiberglass

P.O. Box 55301, Dept. KC  
Phoenix, AZ 85022  
602/377-0104  
www.vwinnovations.com  
Manufactures VW Beetle-based 930 Vees  
930 Vee: kit - \$2,296; turnkey - starts at \$6,000

## Intermeccanica International Inc.

150 E. First Ave., Dept. KC  
Vancouver, British Columbia, Canada V5T 1A4  
604/872-4747  
Manufactures VW-based Porsche and Jeep kits and turnkeys  
Kubelwagen: kit - \$9,900; turnkey - call for pricing  
Porsche 356 roadster GS: turnkey - call for pricing  
Porsche 356 roadster RS: kit - \$12,900; turnkey - \$23,350  
Porsche 356 Speedster: kit - \$12,100; turnkey - \$22,400

## IRM

18100 Cashell Rd., Dept. KC  
Rockville, MD 20853  
301/948-3301  
Builds IMSA Fiero specialty cars

## Janows Custom Rods

1101-2 Mount Zion Rd., Dept. KC  
Dalton, GA 30721  
706/278-7382  
Builds chassis and packages rods with Wild Rod, builder of '37 Ford bodies, and Coast To Coast, builder of '39 Ford bodies

## Jasper Performance Products

815 Wernsing Rd., Dept. KC  
Jasper, IN 47546  
800/827-7455  
Manufactures components and Cobra packages

## Jaxports

3001 N. Logan Ave., Dept. KC  
Lansing, MI 48906  
517/886-9301  
Manufactures Streetster, a 3/4-scale '32 Ford roadster replica  
Streetster: kit - \$10,000-\$17,295; turnkey - \$29,995

## JB Donaldson

2533 W. Cypress St., Dept. KC  
Phoenix, AZ 85009  
602/278-4505  
www.jbdonaldsonco.com  
Manufactures '35 and '36 Ford three-window coupes and roadsters based on TCI and Rod Factory chassis

## JM Design Auto Sport

294 Principale, Dept. KC  
Lac Carre, Quebec, Canada J0T 1J0  
819/688-2631  
Manufactures Paladimo kits for '88-'94 Cavalier and Sunbird  
Paladimo: kit - \$7,800

## Johnex Motorsports

8636 Mississauga Rd., Dept. KC  
Brampton, Ontario, Canada L6V 3N2  
905/456-7373  
Manufactures 427 and 289 Cobra replicas

## JPR Cars Ltd.

82 Gatsby Ln., Dept. KC  
Topping, VA 23169  
888/4-GATSBY  
804/758-2551  
www.gatsbycars.com  
Manufactures Gatsby Griffins based on Cougar or T-bird donor, cabriolet kits based on '77-'79 Cougar or T-bird donor, and Wildcats based on '79-'92 Mustang  
Gatsby Griffin: kit - \$8,990; turnkey - \$43,500  
Gatsby cabriolet: kit - \$3,000-\$17,000; turnkey - \$34,500  
JPR Wildcat: kit - \$7,900; turnkey - \$28,000

## JPS Motorsports

11323 Vanowen St., Dept. KC  
N. Hollywood, CA 91605  
818/985-8891  
www.unionmall.com/JPS  
Formerly Autospeed, manufactures Cobra S/C and Porsche Speedster, Ford highboy, and Humm-Vee replicas  
Speedster: kit - \$6,950; turnkey - \$17,500  
Flared Cobra S/C: kit - \$9,950; turnkey - \$17,900  
HalfVee: kit - \$4,450; turnkey - \$9,950 plus  
'32 highboy: kit - \$5,307; turnkey - call for pricing

## Jurassic Truck Corp.

2118 E. Randol Mill Rd., Dept. KC  
Arlington, TX 76011  
817/459-0852  
Manufactures T-Rex series of steel trucks  
T-Rex 1-B: kit - \$16,500  
T-Rex 1-B roadster: turnkey - \$27,500

## K-1 Styling & Tuning

Hradka 77, Dept. KC  
821 07 Bratislava  
Slovak Republic  
421/7-4525-9919  
Represented in U.S. by Euro-Works; manufactures the Evoluzione and the new Attack for Firebird and Camaro donors

## Keith Wright Enterprises

94223 Arthur Ln., Dept. KC  
Coos Bay, OR 97420-8270  
541/269-1347  
www.kw-enterprises.com  
Manufactures the F-Zero, a conversion of the Porsche 914, and the Wicked Wing conversion for a Honda Goldwing, GL-1000-1200  
F-Zero: kit - \$2,200  
Wicked Wing: kit - \$1,375

## Kit Car Auto Diseno

Ave. de Juan del la Barrera, No. 650, Dept. KC  
Col. Pro-Hogar, Mexicali, Baja California, Mexico  
05-265-6745-68  
Manufactures Fiero-based EB 110 and Dragon replicas  
EB 100: kit - \$9,000; turnkey - \$30,000  
Dragon: kit - \$12,500; turnkey - \$35,000

## Kits That Fit

7325 Belle Meade Blvd., Dept. KC  
Miami, FL 33138  
305/956-3352  
Vypor roadster and GTS kits

## Krasaga Corp.

3578 S. Van Dyke Hwy., Dept. KC  
Almont, MI 48003  
810/798-8567  
Manufacturer of the IndyCycle, a motorcycle-based three-wheel kit car, with a CART or Formula 1 look. The car has a fiberglass body, most often using Kawasaki or Suzuki donors  
IndyCycle: kit minus donor and engine - \$3,995



## KoobleKar by Skunkwerkes

11207 Acoma SE, Dept. KC  
Albuquerque, NM 87123-3337  
505/292-5614  
www.kooblekar.com  
Manufactures VW Bug-based Streakar and Kooble kits and turnkeys, and a Kharman-Ghia-based Kountry Kar  
Streakar: kit - \$1,995  
Kooble Kar T-82R: kit - \$5,750; turnkey - starting at \$13,750  
Kountry Kar: kit - \$4,900

## Kustom Konversions

4845 Oak Tree Ct., Dept. KC  
Burnaby, British Columbia, Canada V5G 4K9  
604/436-0656  
Manufactures kits to help convert Diablos to roadsters

## L.A. Concept Cars

3151 Cooper St., Dept. KC  
Punta Gorda, FL 33950  
941/505-1166  
Manufactures Lamborghini Countach V-8 kits

## Lamboshop

Dixie Farms Business Park, Ste. D143  
15255 Gulf Fwy., Dept. KC  
Houston, TX 77034  
281/464-6444  
www.lamboshop.com  
Manufactures Lamborghini body kits and turnkeys in various power packages from under \$30,000 to \$38,000 complete



## Laminar Concepts Inc.

1426 W. Baltimore Pike, Dept. KC  
Media, PA 19063  
610/558-9263  
www.laminarauto.com  
Manufactures Mazda-based kits  
Evolution Europa: kit - call for pricing; turnkey - \$64,500  
Viking BE roadster: kit - \$12,500; turnkey - \$23,500  
Viking Sport roadster: kit - \$12,500; turnkey - \$29,500  
Viking TT roadster: kit - call for pricing; turnkey - \$44,500

## Lightning Motorcycles

305 Conchas SE, Dept. KC  
Albuquerque, NM 87123  
888/999-1958, 505/323-0496  
www.lightningmotorcycles.com  
Manufactures the Lightning, a three-wheeled, open-air, two-passenger, V8-powered motorcycle kit  
Lightning: rolling chassis - \$17,995; turnkey - \$34,995

## Lone Star Classics Inc.

2290 W. Hicks Rd., Hangar 28R, Dept. KC  
Fort Worth, TX 76131  
877/572-2277  
www.kitcarzone.com  
www.carpartsale.com  
Manufactures a variety of replicas, including Cobra, '53 Vette, '32 Ford, Mercedes-Benz, GT40, and VW-based Lamborghini, and GT40 and Grouler kits and turnkeys  
Cobra 427: kit - \$12,995; turnkey-minus - \$22,745; turnkey - \$35,000  
Corvette '53 Route 66 roadster kit - \$13,995; turnkey - \$32,685  
Ford '32: kit - \$9,815; turnkey - \$32,000  
Grouler: kit - \$13,995; turnkey - \$34,000  
GT40: kit - \$16,000; turnkey - \$40,000 plus engine and transaxle  
Lamborghini: kit - \$18,000; turnkey - call for pricing  
Mercedes-Benz 300: kit - \$11,995; turnkey - \$28,900

## Madd Stuff

P.O. Box 148, Dept. KC  
Conesus, NY 14435  
716/335-4729  
Manufactures fiberglass body kits that can transform '76-'95 Jeep CJ-7 or YJ into a Hum-J  
Hum-J: kit - \$2,499; turnkey - call for pricing

## Mariah Motorsports

414 N. Salispuedes, Dept. KC  
Santa Barbara, CA 93103  
805/965-5115  
www.mariahmotorsports.com  
Manufactures the Mariah Mode One kit, based on the '79-'85 Mazda donor, and the Mariah Mode Six kit, based on the '86-'92 Mazda RX-7 donor  
Mariah Mode One: kit - \$1,195  
Mariah Mode Six: kit - \$3,995; turnkey - call for pricing

## Mark's Custom Kits Inc.

2217 W. Clay St., Dept. KC  
Kissimmee, FL 34741  
321/697-5445  
www.markscustomkits.com  
Manufactures fiberglass components for Firebird and Fiero donors

## Master Street Rods

515 W. First St., Dept. KC  
Tempe, AZ 85281  
480/731-3146  
Manufactures '39 Studebaker Coupe Express trucks that sit on Chevy S-10 frames  
'39 Studebaker: kit - \$11,888;  
turnkey - \$18,888 plus chassis, wheels, and tires

## Matt Adams VSE

8 Via Contenta, Dept. KC  
Carmel Valley, CA 93924  
831/659-7660  
Manufactures Cobra 427 roadster, Corvette, and Rabbit kit cars and performance chassis packages and the new Chevy-based Blitz Speedster  
VSE Pallet Car Cobra: body kit - \$9,500; rolling kit - \$28,200

## Maximum Torque Specialties

P.O. Box 925, Dept. KC  
Delavan, WI 53115  
414/740-1118  
Manufactures V-8 Corvair kits



## KIT AND COMPONENT CAR BUYER'S GUIDE



### Melson Motor Sports

4844 Park County Rd. 43, Dept. KC  
Bailey, CO 80421  
303/838-8811  
www.melsonmotorsports.com  
Manufactures and builds GT40s; also serves as dealer/builder of Cobras, Healeys, and Badlands R.A.T. Hummers from Classic Roadsters and B&B Cobras

### Mid-America Industries

1519 E. First Ave., Dept. KC  
Milan, IL 61264  
309/787-5119  
Manufactures of Grand Sport Corvette replica kits and turnkeys since 1983, on custom-built tubular frames  
Grand Sport kit: \$34,340 for roller



### MidStates Classic Cars & Parts Inc.

835 W. Grant, P.O. Box 427-M, Dept. KC  
Hooper, NE 68031  
402/654-2772  
www.cobracountry.com/midstates  
www.midstatesclassics.com  
Manufactures 427 S/C Cobra replicas and parts  
Cobra 427 S/C: kit - \$6,690; turnkey - \$39,000

### Mitcham Street Rods & Resto Inc.

33679 E. Fremont St., Dept. KC  
Townville, PA 16360  
814/967-2309  
Builder of street rods and restorations

### Monte Carlo Classics

6312 DuPont S., Box 107, Dept. KC  
Richfield, MN 55423  
612/866-2656  
Manufactures '27 Road Runner vintage trucks on Pinto, Bobcat, and Mustang donors

### Moto America Inc.

4845 Highpoint Dr., Dept. KC  
Marietta, GA 30066  
770/928-3555  
Builds Caterham kits and turnkeys  
Caterham Classic Super Seven: kit - \$19,230; turnkey - \$24,230  
Caterham 1700 Super Sprint: kit - \$25,695; turnkey - \$34,295

### Mullen Motor Co.

2240 Main St., No. 27, Dept. KC  
Chula Vista, CA 91911  
310/486-6332  
www.mullenmotorco.com  
Manufactures the Mullen M-11 McLaren-esque kit and turnkey

### Neria Yachts & Cars Inc.

5316 Denree Dr., Dept. KC  
Wilmington, NC 28405  
910/791-8546  
Manufactures Nerias with Mustang II front suspension and Porsche with VW or GM rears  
Neria: kit - \$7,245; turnkey - V-6 \$28,400, V-8 \$35,780

### North American Exotic Replica Cars

402 Highlands Cir., Dept. KC  
Saskatoon, Saskatchewan, Canada S7H 4V1  
306/668-8149  
www.exoticreplicas.com  
Manufactures Lamborghini Diablo roadster, SV, VT, 6.0, and 30th-anniversary kits



### NF Auto Development Foreman

Redlands, Lindridge Ln., Dept. KC  
Staplehurst, Kent, TN12 0JJ, U.K.  
011/44-1580-891-309  
www.nfauto.co.uk  
Manufactures Foreman Can Am and Mk 4 kits and turnkeys on tubular space-frame chassis  
Foreman Can Am: kit - \$15,250-\$24,500

### NW Exotics

845 NW Dunbar, Ste. B106, Dept. KC  
Troutdale, OR 97060  
503/667-0427  
Manufactures Cobra replica kit cars

### Old Chicago Street Rods

16169 SE 106th Ave., Dept. KC  
Clackamas, OR 97015  
503/655-1941  
Manufactures three body styles of '34 Chevys

### Outlaw Performance/The Legend Continues

P.O. Box 550, Rte. 380, Dept. KC  
Avonmore, PA 15618  
412/697-4876  
Manufactures '40 Outlaw Willys, fiberglass bodies, and chassis

### Out of Florida

7320 Cone Shell Dr., Dept. KC  
Spring Hill, FL 34607  
352/597-9473

Manufactures '40 Wicked Willys, '41 Willys coupes, and '32 three-window Fords

### The Performance Factory

2255 B Queen St. E.  
No. 315, Dept. KC  
Toronto, Ontario, Canada M4E 1G3  
416/893-3140  
Manufactures bolt-on pre-primed or custom-gelcoat Viper kit panels for C4 and C5 Corvette chassis from 1984 to present; has also produced Porsche products for more than 10 years

### Perry DS Inc.

1560 Commerce St., Ste. H, Dept. KC  
Corona, CA 91720  
909/279-6498  
Manufactures Porsche 550 Spyder kits based on VW Beetle 550 Spyder: kit - \$3,800; turnkey - starting at \$16,500

### Pigeon Performance

1420 Rte. 125, C.P. 670, Dept. KC  
Ste-Julienne, Quebec, Canada J0K 2T0  
450/831-2791  
Manufactures handlaid fiberglass Cobra replica kits and turnkeys

### Pilgrim Cars

No. 14, Mackley Ind. Est., Small Dole, Nr. Henfield, Dept. KC  
Sussex, BN5 9XJ, U.K.  
011/44-1273-493860  
The Pilgrim Sumo is a classy Cobra; company also does a Jeep Eagle RV, Healey 3000, and MG Bulldog

### Piranha Motor Car Company of America

2486 Fairview Way, Dept. KC  
Costa Mesa, CA 92626  
714/642-7701  
Manufactures VW-based kits  
Piranha roadster: kit - \$5,995; turnkey - call for pricing

### PISA Corp.

31 S. 42nd Pl., Dept. KC  
Phoenix, AZ 85034  
602/273-1616  
www.cybercars.com  
Manufactures Fiero body kits—including Jalapeno and Artero—interiors, and custom parts  
Jalapeno: call for pricing  
Artero: kit - \$4,750; turnkey - \$18,500  
Scorpion: kit - \$4,750; turnkey - \$18,500  
XTC/GT: kit - \$4,750; turnkey - \$19,900  
ZR-2: kit - \$4,250; turnkey - \$18,500

### Power Performance

396 NW 65th Ln., Dept. KC  
Des Moines, IA 50313  
515/289-2195  
www.pwrperformance.com  
Manufactures '66 Cobra replicas with 4-inch mandrel-bent round-tube chassis  
Cobra kit: \$14,995; turnkey: starting at \$39,000

### Precision Design and Engineering

518 S. Quince St., Dept. KC  
Escondido, CA 92025  
760/740-0230  
Manufactures GT250 California Spyders  
GT250: kit - \$11,650; turnkey - \$42,750

### Predator Performance Inc.

12240 75th St. N., Dept. KC  
Largo, FL 34643  
813/539-0218  
Manufactures D- and F-type fiberglass Jaguar replicas, including XJ13

### ProMax Corp. Vennom

P.O. Box 960, Dept. KC  
Clinton, TN 37717  
865/457-7605  
www.vennom.com  
Manufactures '67 Nova kits, 7/8-size '57 Chevys, and fullsize '69 Mach 1 Mustang kits; body bolted on original chassis

### Pro SCA

16529 Sierra Hwy., Dept. KC  
Santa Clarita, CA 91351  
805/251-5910  
Manufactures Porsche 940/S reproduction kits



### Prototype Research & Development Ltd.

230 Albert St., Dept. KC  
Campbellford, Ontario, Canada K0L 1L0  
705/653-4525  
Manufactures Chevy Caprice-based kits and turnkeys  
'34 Mercedes 500K: kit - \$14,500; turnkey - \$45,500  
'35 Auburn two-seater: kit - \$14,200; turnkey - \$45,500  
'35 Auburn four-seater: kit - \$15,200; turnkey - \$49,500  
'52 MGTD: kit - \$9,500; turnkey - \$17,500  
'55 Chevy Bel Air convertible: kit - \$9,100; turnkey - \$43,900  
'57 Chevy Bel Air convertible: kit - \$10,100; turnkey - \$47,900

### Protruck

9409 Abraham Way, Dept. KC  
Santee, CA 92701-2586  
619/449-6252  
Produces kit trucks and trucks for its racing series

### Python Vehicles Australia

201 Ferrars St. S., Dept. KC  
Melbourne 3205, Victoria, Australia  
03-9696-0646  
www.python.au.com  
Manufactures Python SR302 Cobra replicas on ladder-frame steel chassis

### Q.C.E.

2229 Pelican Dr., Dept. KC  
Grove, OK 74344  
918/253-6549  
Manufactures VW Beetle-based Blaze kits and turnkeys  
Blaze: kit - \$3,740; turnkey - \$14,995



### R&D Design Concepts Inc.

9536 Military, Dept. KC  
Omaha, NE 68134  
402/572-0176  
www.rnddesignconcepts.com  
Manufactures entry-level Cobra Daytona coupe kits on ladder-type chassis  
Cobra Daytona: kit - \$7,995; rolling chassis - \$14,000

### Rat's Glass

Alloway's Rod Shop  
844 Collie Cove St., P.O. Box 117, Dept. KC  
Friendsville, TN 37737-0117  
423/995-2756, 423/977-9140  
Manufactures the Speedstar, '32-'33 three-window coupes, and '32-'33 roadsters; complete body packages to rolling chassis

### Ravon Street Rods Inc.

701 Daniel St., Dept. KC  
Billings, MT 59101  
800/735-1189  
Manufactures '32-'34 Ford fiberglass bodies and chassis



# KIT AND COMPONENT CAR BUYER'S GUIDE

**Rayco Inc.**  
1710 Delmar Blvd., Dept. KC  
St. Louis, MO 63103  
314/621-1321  
Manufactures Porsche 914-based kits and turnkeys  
986 Slant-Nose Boxster: kit - \$1,500

**Real Hot Rods**  
107 W. Railroad St., Dept. KC  
St. Johns, MI 48879  
989/224-2122  
Manufactures modified hot rods, including '28 Model A on a custom tubular steel chassis  
Model A Modified: kit - \$13,000

**Real Steel Inc.**  
Steve's Auto Restorations Inc.  
4440 SE 174th Ave., Dept. KC  
Portland, OR 97236  
503/665-2222  
www.realsteel.com  
Makes all-steel '32-'34 Ford cabriolet and roadster bodies, chassis packages, and turnkeys

**Rebel Yell Inc.**  
P.O. Box 375, Dept. KC  
Spearfish, SD 57783  
605/644-0118  
www.rebelyellinc.com  
Makes 2000 Rebel roadster, a Jeep conversion

**Red Dawg Racing**  
16959 Blackburn Canyon Rd., Dept. KC  
Tehachapi, CA 93561  
805/823-0747  
Manufactures Porsche 940S-updated 914 kits



**Regal Roadsters Ltd.**  
301 W. Beltline Hwy., Dept. KC  
Madison, WI 53713  
608/273-4141  
www.regalbird.com  
Manufactures replicas of '55 and '56 T-birds  
T-bird: kit - \$15,995 deluxe; turnkey - \$44,900  
Thunder: kit - \$15,995; turnkey - \$44,900



**R MotorSport/Divar Roadster**  
6560 Anthony Dr., Dept. KC  
Victor, NY 14564  
716/924-8910  
www.divaroadster.com  
Manufactures Divar Roadster and Speedster kits in component form on a custom multi-tube chassis  
Divar Roadster: kit - \$8,995; turnkey - \$36,995  
Divar Speedster: kit - \$9,995; turnkey - call for pricing

**Rising House Motors**  
56 Grand Summit Rd., Dept. KC  
Cambridge, KS 67023  
620/467-2265  
www.sktc.net/risinghouse  
Manufactures Tipo 61 birdcage Maserati kits and turnkeys on a custom tube frame and VW suspension

**Roaring Forties**  
27 Dalkeith Dr., Dept. KC  
Dromana, Victoria, Australia 3936  
011/61-03-5981-4044  
US Agent:  
Gordon Levy Racing Inc.  
1127 E. Curry Rd., No. 3, Dept. KC  
Tempe, AZ 85281  
480/446-8442  
Manufactures GT40 replicas

**Rod Bods**  
1703 Greg St., Dept. KC  
Sparks, NV 89431  
775/358-1930  
Builds steel '32 Ford roadster bodies

**Royal Roadsters**  
623 Patterson Rd., Dept. KC  
Durham, NC 27704  
919/598-3639  
Distributes SMC Cobra replicas

**SBS Industries Inc.**  
488 W. Highbanks Rd., Dept. KC  
De Barry, FL 32713  
407/668-2352  
Manufactures Honda 250 motorcycle-based three-wheel kits  
Tri-Tech Schmitt: kit - \$5,300; turnkey - \$15,000  
Tri-Tech Zetta: kit - \$5,300; turnkey - \$15,000

**Shelby American**  
501 S. Rancho Dr., Ste. H53, Dept. KC  
Las Vegas, NV 89106  
702/598-3702  
Manufactures of original 427 S/C Cobras  
Cobra 289 FIA, 289 Street: kit - \$40,000; turnkey - \$65,000  
Cobra CSX 4000: kit - \$42,200; turnkey - \$85,000



**Shell Valley Companies Inc.**  
23119 287th St., Dept. KC  
Platte Center, NE 68653-5055  
888/246-0900, 402/246-2355  
www.shellvalley.com  
Manufactures Cobra 427 S/C replica kits and, new for '02-'03, Cheetah roadster kits, Jaguar Scuderia Corsa Tipo 166 kits, and A roadster hot rod kits, all on Shell Valley rectangular-tube chassis.  
Manufacturing in conjunction with Team-C-Racing.com  
Cobra 427 S/C: kit - starting at \$6,790  
Cheetah, Tipo 166, and A roadster: kits - call for pricing

**Simpson Design and Development**  
2475 Discovery Pl., Dept. KC  
Langley, WA 98260  
360/371-4122  
www.simpsondesign.net  
Designs Miata Italia and Manta Ray conversions in kits or turnkeys  
Miata Italia: conversions - \$8,000

**Snake Pit Cobra Co.**  
32561 Chestnut Ridge Rd., Dept. KC  
N. Ridgeville, OH 44039  
216/327-8313  
Assembles Cobra replicas and engines



**Solid Sterling**  
P.O. Box 927, Dept. KC  
St. Helens, OR 97051  
503/366-0553  
Manufactures VW Beetle-based Sterling kits and turnkeys  
Sterling: kit - \$7,390  
Sterling Targa: kit - \$8,500

**Specialty Car Interiors**  
999-C Edgewater Blvd., Ste. 379, Dept. KC  
Foster City, CA 94404  
415/738-8301  
Manufactures interior kits for Fieros

**Specialty Motor Cars**  
4656 Bridgewater, Dept. KC  
Fayetteville, AR 72703  
501/443-7072  
Manufactures Cobra replica kits and turnkeys

**Speedster Motorcar Co.**  
9210 Turkey Shoot Rd., Dept. KC  
Port Richey, FL 34654  
727/819-0951  
www.speedstermotorcar.com  
Manufactures '35 Auburn Boattail Speedster replicas  
Auburn Boattail Speedster: kit - \$22,500; turnkey - \$70,000

**Speedway Motors Inc.**  
340 Victory Ln., Dept. KC  
Lincoln, NE 68528  
402/323-3200  
www.speedwaymotors.com  
Manufactures complete vintage replica kit cars, parts, and accessories  
'23 T roadster: kit - \$2,699  
'27 T roadster: kit - \$2,995  
'27 Track T roadster: kit - \$2,999  
'32 Lo-Boy roadster: kit - \$4,999  
'34 Ford Club Cab pickup: kit - \$5,499

**Sportech International**  
P.O. Box 2501, Dept. KC  
Ewa Beach, HI 96706  
808/677-6559  
Manufactures car with Kevlar-reinforced body panels on square-tube frames, powered by 16-valve DOHC four-cylinder Suzuki motorcycle powerplants

**Stable Autoworks**  
565 Sterling Dr., Dept. KC  
Richardson, TX 75081  
972/680-3731  
www.zcarkits.com  
Manufactures '62 GTO F250 (formerly Rhino GT) kits and turnkeys  
GTO F250: kit - \$3,995; turnkey - \$20,000

**Steve's Auto Restorations Inc.**  
4440 SE 174th Ave., Dept. KC  
Portland, OR 97236  
503/665-2222  
www.stevesautorestorations.com  
Manufactures steel, '33-'34 roadster bodies; full rod construction

**Strand Components Inc.**  
P.O. Box 244, Dept. KC  
Roselawn, IN 46372  
219/987-6062  
Manufactures components for '27 and '32 Fords and '33 Willys

**Street Beasts/Innovative Street Machines LLC**  
4350 W. Sunrise Blvd., No. 107, Dept. KC  
Plantation, FL 33313  
888/888-6645  
www.streetbeasts.com/kc  
Manufactures '66 Cobra 427 S/C replicas, Porsche Speedsters, '33 Vicks, '34 Ford cabriolets, and '41 Willys replicas  
All kits - from \$129/month



**Stylistic Innovations**  
P.O. Box 2802, Dept. KC  
San Pedro, CA 90731  
310/221-0932  
Manufactures XK Miatas and Jaguar XKE roadster body kits for Miata platforms

**Sun Ray Products Corp.**  
8017 Ranchers Rd., Dept. KC  
Minneapolis, MN 55432  
800/333-3494  
763/780-0774  
Manufactures Bradley GT replicas and Bradley and Invader parts

**Sun Valley Autotech Inc.**  
13802 Scottsdale Rd., No. 104134, Dept. KC  
Scottsdale, AZ 85254  
602/991-8975  
Manufactures the Veepster, a VW-based Jeep  
Veepster: kit - \$1,295-\$4,495; turnkey - call for pricing



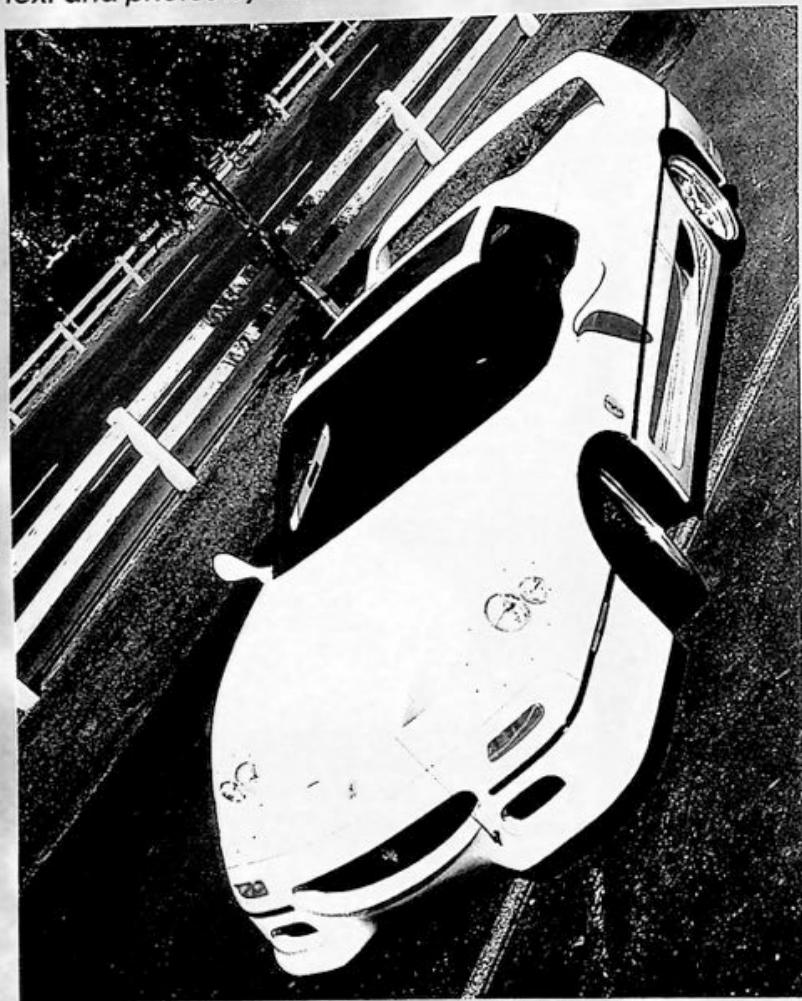
**Superformance Complete Replicas**  
11861 Canon Blvd., Ste. E, Dept. KC  
Newport News, VA 23606  
800/29-SNAKE, 757/591-5265  
www.superformance.com  
Manufactures Cobra 427 S/C reproductions; turnkey minus, Daytona Coupes, and Superformance S1 roadsters  
Cobra 427 S/C: turnkey-minus - \$36,300  
Coupe and S1: call for pricing



# Fun Under The

The 23rd Annual AHA car show at Knott's Berry Farm was a two-day homage to great cars and fun people

text and photos by Mike Blake



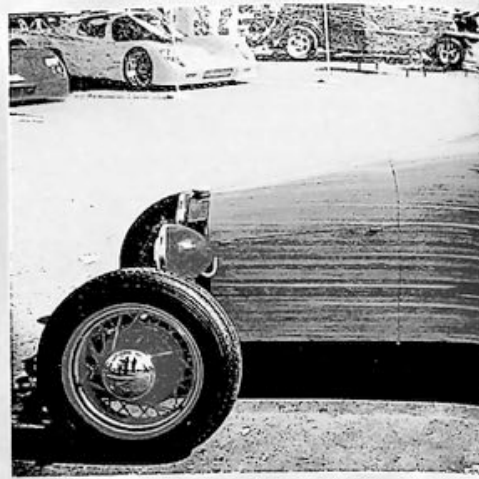
Rik Mitchell's handmade Fiero-based Ferrari F50 Pininfarina is a one-off that is for sale. Enzo's legal team put the kibosh on Rik's dream of a line of Ferrari replicas. The white Pininfarina sits on a Fiero frame that's stretched 7 inches. It's powered by a 3.1L 200hp engine.

An annual gathering that is the highlight of the West Coast kit car year, the Association of Handcrafted Automobiles' (AHA) Fun Under The Sun show is always exhilarating, rain or shine, though at first it looked as if it might be the Fun Under The Clouds show. True to form, however, the Southern California sun broke through, and the two-day kit car event was a fun, exciting, and warm get-together.

The AHA stages this wonderful combination of craftsmanship, automo-

tive innovation, awesome paint jobs, and kit car camaraderie across the parking lot from Buena Park's internationally known theme park, Knott's Berry Farm. This year, the event attracted 183 kit and component cars and some 10,000 guests (about 6,000 Saturday and 4,000 Sunday).

Factory Five Racing was there in force, underwriting a number of attendees and placing some 50 FFRs at the show. All told, the 183 cars—most were replicas, but a few original designs and a few one-offs were on



The Kit Car magazine's Editor's Choice Car of the Show trophy went to Gary and Terry O'Connor for their wooden-bodied '23 Track-T "Woodster." Gary made the body from the wood taken



Chuck Sundstrom's Group Five Limited Cobrette sports a PPG Chrome Illusion paint job. The Cobrette is a '66 Cobra based on a

display—were categorized as 76 Cobras and Daytonas, 16 Ferraris, 12 Porsches, 8 Lamborghinis, 6 Mercedes, and 65 miscellaneous types, including a few Rodsters, some Deuces and '34 Fords, a Xanthos, an IndyCycle trike, a Hummer, and even a dune buggy for good measure.

At shows such as this, I generally award a trophy titled *Kit Car Magazine* Editor's Choice Car of the Show. At this event, I awarded it to Gary and Terry O'Connor for their innovative '23 Track-T "Woodster," a Corvair-powered

www.kitcarmag.com

# Sun & Clouds



from his back fence and put it on a '63 VW chassis. The car is powered by a 110hp Corvair engine and is adorned with '35 Ford wheels. Gary says he has enough fence for one more car.

John Pfaffman delighted on-lookers with his Boyd Coddington's Garage/Image Auto Works Cobra 427 S/C replica. A new addition to the kit car scene, street rod legend Coddington designed this beauty with a Salisbury independent rear and popped in a '65 Ford 427 side-oiler engine, which was bored out to 430 ci and produces 550 hp for a top speed of 160 mph.



Rich Anderson's Shell Valley Cobra 427 replica was outfitted with slick PPG Orange, a Pearl undercoat, and white stripes. Looking like the best-tasting creamsicle you ever had, this car attracted throngs of admirers. Under the hood was a Blue Oval 5L engine pumping out 350 horses.

'68-'82 Corvette C3 chassis. Under the hood is a 400hp Chevy 350ci V-8. Film just doesn't capture the ever-changing color patterns of this exquisite paint.

roadster whose body was fashioned entirely out of the O'Connors' wooden back fence. The winners barely beat out Rik Mitchell's handmade, one-of-a-kind F50 and Juan Graziano's one-off Viper, which sits on an '86 Corvette chassis. But how can you not give an award at a handcrafted-automobile show to a guy who made his car out of a fence?

Rik built his striking Fiero-based Ferrari F50 Pininfarina one-off as a prototype for a line of kit replicas. He was thwarted by Ferrari's legal team,

www.kitcarmag.com

who made him promise to end his creative craftsmanship with this one vehicle (which is now for sale by the owner; reach him at 760/631-1505). Rik stretched his Fiero frame by 7 inches for a 100.6-inch wheelbase and popped in a 3.1L, 200hp engine that propels this car from 0 to speed limit in the blink of an eye. Only 349 of the original were made from 1995 to 2000, and they sell for an estimated \$500,000...many times more than this awesome replica.

There were two exciting pieces of news to come out of the show. First

was the entry of street rod legend Boyd Coddington into the kit car industry. He came to the show with a new Cobra 427 replica on his own chassis and with Salisbury IRS. Built in conjunction with Image Auto Works, this Coddington's Garage Snake is owned by John Pfaffman and was accompanied to the show by a Boydster I '32 Ford. Coddington told me that his Boydster II, a '33-inspired model, is set to be unveiled by late fall.

The second tidbit came from Rich Anderson at Shell Valley, who is now

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## FUN UNDER THE SUN & CLOUDS

working with TeamC-Racing.com to produce a sexy, classy '52 Jaguar XK120 Scuderia Tipo 166 racer. The sleek roadster is scheduled to make its debut at the Carlisle Kit Car Nationals. We will show it to you in the next issue of *Kit Car*. Rich also announced that the premiere of his new Cheetah kits will take place at Carlisle, and you'll see a preview of that sharp racer in the next issue as well.

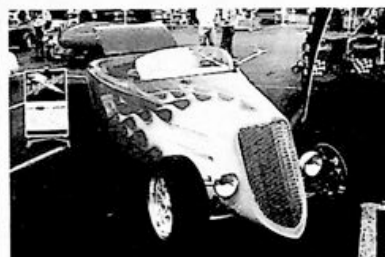
Getting back to the West Coast and the AHA Knott's show, the only controversy of the event appeared when Jim Michaud's sharp-looking Lambo Concept Chameleon paint job won the show's Best Paint award for the second consecutive year. This car has an awesome, ever-changing appearance; however, some felt that since it was the same paint job as last year, the award might have gone elsewhere this time. For me, the best paint was a tossup between Shell Valley's awesome Cobra 427 replica with PPG Orange paint, a Pearl undercoat, and white stripes, and the blue-green PPG Chrome Illusion Cobrette (Cobra on a Corvette chassis) from Group Five Limited.

Other awards are too numerous to mention here (generally First through

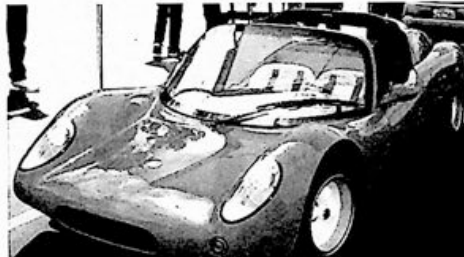
Third Place trophies were given) but are available on AHA's Web site, www.replicarclub.com. Some of the awards included the following: Early Sports (pre-'65) First Place—Chuck Bradley's Bradley; Late Sports ('65- and-later) First Place—Dominick Cacioppo's Puma; Grand Touring First Place—Wayde Presley's blue C.A.V. GT40; Neo-Classic First Place—Walt Herd's yellow Cord; Porsche First Place—Dale Bates' '58 Speedster; Lamborghini First Place—Oganes Terteryan's black Diablo; Ferrari (under \$20,000) First Place—Dan Barbee's 246 Dino; Ferrari (\$20,000 and over) First Place—Rik Mitchell's handmade F50; Special Interest First Place—Henry Caroselli's Rodster sedan delivery; Special Interest/Off-Road First Place—Darcy Hrychiw's Venture Motor Sports Hummer; Street Rod First Place—Kenny Graves' '34 Lightning; 289 Cobra First Place—Jackie Madariaga's Daytona Coupe; 427 Cobra (under \$25,000) First Place—Jack Hammond's red 427 Cobra; 427 Cobra (\$25,000-\$50,000) First Place—Mac Comas' black 427 Cobra; 427 Cobra (over \$50,000) First Place—Farra Snook's yellow 427



Ken Esler's Lamborghini Diablo from North American Exotic Replicas made it to California from Saskatoon, Saskatchewan. The spiffy Lambo took Esler 800 hours to complete. The Fiero-based beauty has a 104.3-inch wheelbase and sports a 300hp, 350ci engine with an Edelbrock manifold.

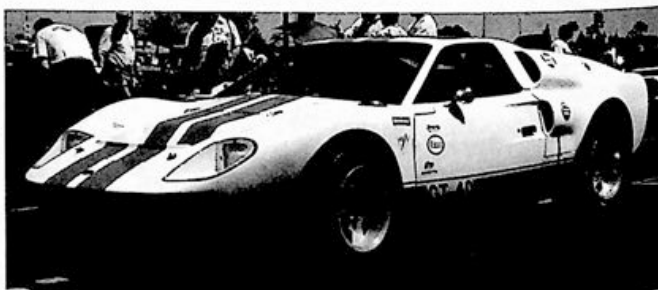


Kenny Graves' '34 Lightning won First Place in the Street Rod class. This beauty from Thunder Ranch sports a Northstar engine and lots of carbon fiber and Kevlar.



Ed Oblad's '73 Extreme GT Xanthos weighs in at only 1,330 pounds and is propelled by a Honda 1.8L engine that pops out 238 hp.

David Hartman's ASPP GT40 Mk II uses an '86 Fiero platform and a 3.4L V-6 Camaro engine. David drove to the West Coast from Chicago to see his old AHA buddies.



Cobra, restored '70s First Place—Tom Sawajko's Corvair dune buggy; and Mercedes First Place—Baron Schmidt's 300SL.

As for the MFG/Dealer entries, winners included Porsche—JPS Motorsports, '57 Speedster; Lamborghini—Top Gun, Diablo; Ferrari—VR Engineering, GTO; 427 Cobra First Place—Shell Valley, 427 Cobra; 427 Cobra First Runner-up—Boyd Coddington's Garage/Image Auto Works, 427 Cobra; Special Interest—Group Five, Cobrette; and Street Rod—The Shoppe, Model A roadster steel reproduction. The AHA's Best of Show trophy went to James Michaud for his Lambo Concept Chameleon.

Finally, the AHA's annual Good Manufacturing Practices perpetual trophy was awarded to John P. Steele of JPS Motorsports in North Hollywood, California.

AHA's Fun Under The Sun is the can't-miss show on the West Coast, and it only gets better every year. For information on next year's show, tentatively set for April 26-27, contact Ron Biggestaff, president of AHA, at 310/336-4830, or visit the AHA Web site at www.replicarclub.com. **KC**



Juan Graziano's one-off Viper sits on an '86 Corvette chassis and is powered by a 500hp Chevy 383 stroker engine. It took Juan three months to build and is one of a kind.



The three-wheeled IndyCycle sits on a Kawasaki ZRX100 platform.

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Roberto Costa's Z-Rod is an '81 model. The Texas-based company bases its street rod kits on Camaros and Firebirds.

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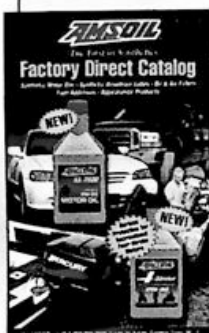
## KIT CAR

THE CAR BUILDER'S AUTHORITY

### Fall 2002 Catalogs

THE CATALOGS IN THIS BONUS SECTION ARE LOADED WITH PERFORMANCE PRODUCTS AND ACCESSORIES FOR YOUR KIT CAR PROJECT, AND BUYING FROM THEM COULDN'T BE MUCH EASIER. CHOOSE AS MANY CATALOGS AS YOU LIKE FROM THE SELECTIONS OFFERED HERE. SIMPLY FILL OUT THE COUPON AT THE END OF THIS SECTION AND MAIL IT OFF. HURRY! OFFER ENDS SOON!

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#### AMERICAN AUTOWIRE



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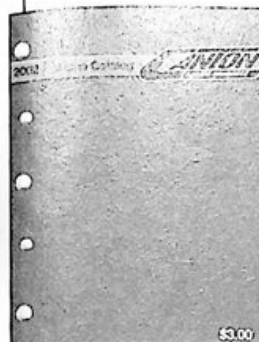
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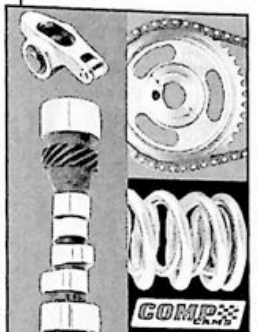
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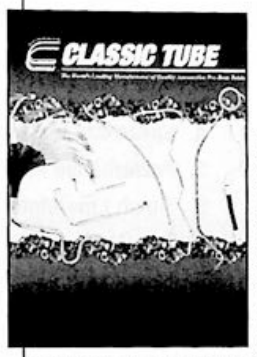
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The new 72-page color catalog from Energy Suspension features its extensive line of performance polyurethane components for a wide variety of cars and trucks. Improve your kit car's performance or build it right from the beginning with applications available for Mustang II, Fiero, Chevy S10, and most other common kit car chassis, along with universal components for custom applications. \$5

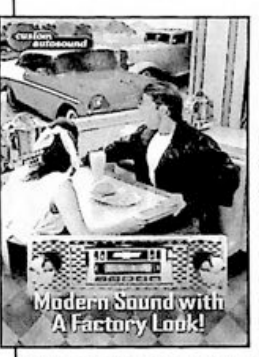
#### COBRA RESTORERS LTD.



#11

Cobra Restorers Ltd., celebrating its 25th anniversary, is pleased to announce the publication of its Catalog No. 10 edition. Featured are parts for both original and replica Cobra roadsters in addition to a complete line of Cobra lettered intakes, valve covers, and other accessories. \$5

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## RON FRANCIS' WIRE WORKS

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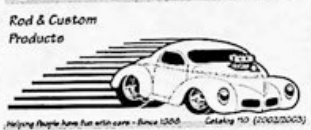


Ron Francis' Wire Works has passed its 25th anniversary in the mail-order, do-it-yourself wiring kit business. The totally new for 2002 catalog features more than 100 pages of wiring and electrical products that all hot rodders and custom builders will find user-friendly. This little book offers real one-stop shopping for wiring, switches, and even electronic fuel injection that works like factory! FREE

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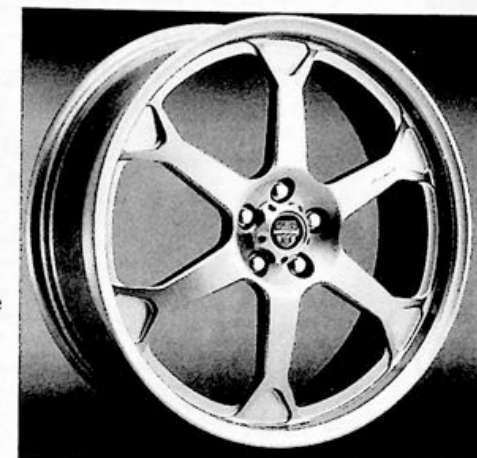


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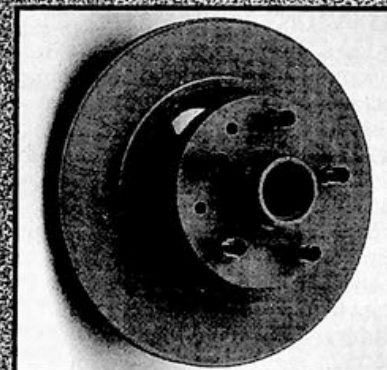
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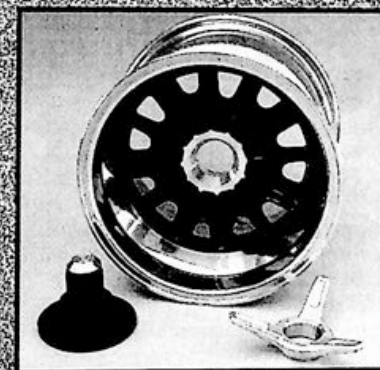
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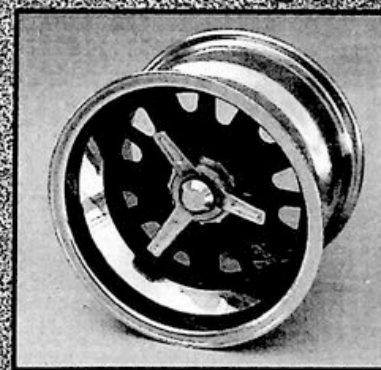
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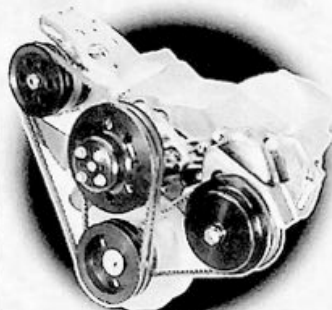
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# KIT TECH

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by Harold Pace

## JAGIERO OR FIEROUAR?

I have been a subscriber to your magazine since 1997. I think I am ready to make the move to my own project car. I am the owner of an '87 Fiero GT and an '84 Jaguar XJ6 coupe, both in running condition. The Jag needs some bodywork and emission work (the interior smells like gasoline even though none seems to be leaking), and the steering rack needs to be rebuilt. The Fiero needs a paint job, a front bumper, and a vent door motor. My dilemma is that I would like to either combine the two into one kit car or preferably make the Jaguar into a kit by changing the body. Please advise or recommend avenues.

John  
Via the Internet

You have two cars that are well-served by the kit car industry. There are many kits available in the United States for Fiero platforms. You will need to decide whether you would rather have an exotic replica (such as a Warlock, Fiero Conversions, IFG, D&R, Exotic Illusions, Euro-Works, or a number of other Lambo-type conversions), or an original design such as the many styles built by PISA, Finale, and other manufacturers. Check the Kit Car Buyer's Guide in this issue (page 42). Held Motorsports (321/868-1832) is a good source for Fiero suspension and brake upgrades. Unfortunately, there are no kits that combine Jag and Fiero parts.

For the Jag, you will need to explore both the American and British kit car markets. There are American Cobra replicas that use Jag suspension, but none that use the Jag engine. There used to be a company called Predator Performance that made D-Type Jag replicas here, but it's no longer doing so. Antique & Collectible Autos builds a nice XK120 Jaguar replica that normally has a V-8 with Mustang II suspension, but it has built them in the past with genuine Jag engines; it also offers a stylish SS-100. Call 800/245-1310 to see if it could incorporate the Jag suspension as well. Shell Valley/Team-C-Racing.com (888/246-0900) now has a wonderful Jag XK120 racer—the Scuderia Tipo 166—that fits on a new Shell Valley/Team C chassis.

By the way, if your car is a two-door XJ6C coupe, it is a collector's item and you can probably sell it for enough to buy a less valuable XJ6 four-door and have some money to put toward your kit.

England is not short of rusty Jag sedans, so it is a popular donor car for kits. In the U.K., you have more places to call (when calling England from the U.S., dial 011-44, then the phone number). In addition to a number of Cobra replicas (that you could get easier here), there are replicas of XK120 and XK140 Jaguars from Autotune (011/1254-886-819), Ayrspeed (011/181-579-8328), and Broomstick Cars (011/1525-220-123). JPR Cars (0-11/1243-765-11) sells XKE replicas, as does Avon Coachworks (011/1761-472-878). Proteus Cars (011/1204-709-465) builds replicas of the C- and D-Type racing Jags, plus the XKSS street version of the D-Type. Suffolk Sportscars (011/1449-672-222) builds a very nice replica of the SS100 Jaguar. For original designs, try Ronart (011/1733-332-913), which manufactures a kit that resembles an early-'50s racing car, or the Royale Motor Company (011/1772-628-462), which builds a neo-classic roadster. All are based on Jag sedan running gear like yours.

Be sure to inquire about overseas shipping and customs so that you know what other charges will be involved. Check with your local DMV about registration and insurance.

## NSX CLONE

I'm a kit car fanatic and subscribe to your magazine. I am interested in building an Acura NSX replica on a Fiero donor. I have a friend who owns an NSX and has agreed to let me make molds but I am unsure of how to make them. Do I have to make each mold separately or can I do the whole car at once? Does the car have to be disassembled in order to make the molds? I want to make the kit like the Ferrari kits or the ones offered by PISA.

Mike Vankough  
Via the Internet

Arguably the sexiest and classiest big cat is the Jaguar XK120, which is offered as a kit by several companies in street and racing styles.



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You certainly have a trusting friend. If you are going to pull molds off of a car with a good paint job (and you only intend to make one body), make your molds from plaster of Paris. This is less likely to harm the paint than trying to use fiberglass with a mold release agent. You will need to remove all of the trim and lighting equipment that would interfere with your molds, but the doors should not have to be removed. You may be making more molds than you think. In addition to nose and tail sections, you will need outer doorskins and perhaps inner ones as well. The biggest challenge will be fitting the NSX panels to the Fiero chassis.

The Fiero has a wheelbase that is 6.2 inches shorter than the NSX, and you will either have to shorten the NSX body or stretch the Fiero chassis. Either is possible, but lengthening the chassis is a lot of work. The NSX is several inches wider than the Fiero, so maybe you can attach NSX doorskins to the outside of the Fiero doors. The NSX doors will undoubtedly require some relocation. The Fiero windshield line and door glass proportions are remotely similar to the NSX, so maybe you can get away with using them as is (this would save a ton of work). The molds will have to be designed to prevent parts from being trapped as they cure. Visualize how the part can be removed once it is rigid. Professionals make their molds with take-apart flanges that can be unbolted for removal. You may end up with just one big mold for the body, but it will be made in a number of pieces so the panels can be removed. Don't underestimate the amount of work you are taking on here, or the cost of NSX trim, glass, and lighting parts. Perhaps you can substitute parts from other Honda or Acura models that have a similar appearance.

Also be aware that if you ever try to sell copies of your car's body, Honda would probably land on you like a ton of sushi! If you try to make a Ferrari clone for sale, Enzo's lawyers will probably get ahold of you faster than it takes to cook a pizza.

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using 2x3-inch rectangular steel tubing and fitted with fully independent suspension. Double A-arms were used with Carrera coilover shocks, sway bars, and disc brakes fitted with GM calipers. A Ford Mustang II (power or manual) steering rack attached to a GM tilt-adjust steering column and a Kamei X-1 steering wheel. An 18-gallon fuel cell and 8-inch-wide 15-inch Enkei alloy wheels were used.

DOT-legal bumpers were installed and an internal rollcage of steel tubing snaked around the windshield pillars, doors, and roof to protect the passengers in case of an accident. A Porsche-style whale-tail spoiler was tacked on in back. Although some kit car touches survived (such as pop-out side windows instead of roll-ups), the interior was nicely finished with fully adjustable Road Handler seats upholstered in leather, VDO gauges (analog was standard, digital was optional), air conditioning, and a Blaupunkt stereo sound system. Pontiac Sunbird taillights were mounted in back and the hood panel was vented for front-mounted radiators and oil coolers. With a dry weight of between 2,200 and 3,000 pounds (depending on engine), the Viper 2000 was advertised to be capable of 0-60 mph in 3.8 seconds with a top speed of around 155 mph.

Although the Viper 2000 was an impressive car, at \$62,000 (nearly twice as much as a new '84 911 Carrera), it did not sell in appreciable numbers. However, it got a lot of press and helped sell more Cimbria SS kits.

## LETTERS TO CARCHIVES

### BUGEYE MIATA

I remember seeing a "Bugeye" hood kit for the Mazda Miata some years ago. Now I'm interested. Do you have any information on this?

Jim Smith  
Alexandria, Virginia

When the Miata was introduced, it filled the slot vacated by traditional British sports cars from Austin-Healey, MG, and Triumph. I recall several variations on a Miata nose that looked like the ones fitted to the Mk 1 "Bugeye" Sprite. One was sold by Vantage Motorsports in Cambridge, Massachusetts, in the early '90s. Designer Andy Rich said the idea came from a Mazda dealer in Tokyo. It was a relatively simple installation, involving replacing the upper bumper bracket and bonding on the new nose. The price was \$589 in 1993. I think that the Maxton kit car company in Colorado sold a similar kit. Unfortun-

## KIT CARCHIVES

Variations on the Viper 2000 chassis could be ordered for kit Cimbrias with rear- or mid-mounted four-, six- or eight-cylinder engines. Kits were sold in basic (one-piece uncut shell) and deluxe (pre-hung doors and all lights and locks installed) form. The deluxe kit also included the instruments, shifter, steering wheel, carpet, upholstery, and hardware.

In 1991, the Cimbria project was sold to Nereia Cars (a division of Nereia Yachts) in Wilmington, North Carolina. Nereia specializes in making short-run fiberglass products including boats and Corvette parts. Nereia continued the basic kit (renamed the Nereia, natch) set up for the VW pan or a custom ladder frame. This frame now sported GM components and was designed to take a transverse-mounted 3.8L V-6 or a 350ci Chevy V-8. Front suspension was GM, and four-wheel disc brakes were standard. Once again, basic and deluxe kits were offered, starting at \$6,485 (in 1991). However, even the basic body was now fitted with hinges and latches, and the biggest difference between the two models was the complete interior (with teak dash and VDO gauges) in the deluxe. Nereia (910/791-8546) supposedly still sells this classic kit, but I have been unable to get the company to return phone calls.

The Cimbria and Nereia sold in the hundreds (pretty good in kit car terms), and there is even a club for Cimbria and Sebring fans. For more info on the club, contact Joseph Domanico at Dept. KC, 6 Dixie Dr., Bel Air, Maryland 21014.

nately, I don't know of one currently in production.

### MANTA MAGIC

I am looking for information on a Manta Montage. It used to fit on a VW frame. I am also trying to find out if there are there any kit car manufacturers that carry three-wheel cars?

Butch Miller  
Via the Internet

The Manta Montage was a McLaren M6GT replica built in the late '70s. The first kits fit the VW floorpan with VW, Porsche, or V-6 engines in back. A Montage-T kit was added that had a space frame for V-6 or VW Sirocco engines, and Crosby Metal Products made a kit to install small-block Chevys on Olds Toronado transaxles in the VW-based Montage. In 1984, the Manta kits were bought by Warp Five Engineering, which also made a three-wheeler kit called the Starship. We are planning a special article on trikes, so stay tuned.

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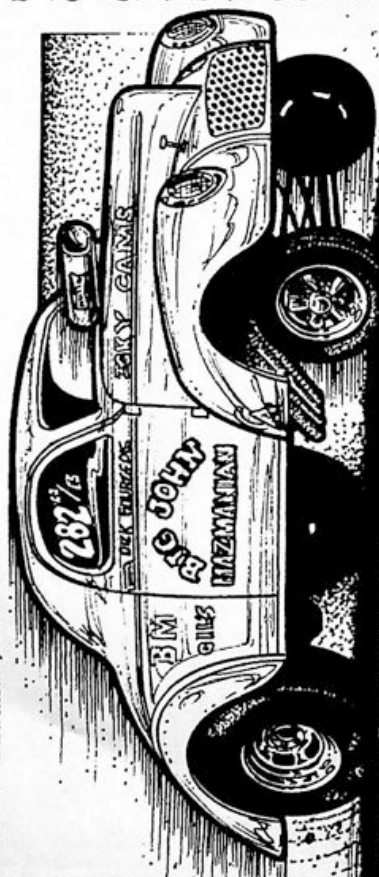
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# KIT CAR PROFILES

Written & Illustrated by K. Scott Teeters



The 1940 to 1941 Willys is one of drag racing and street rodding's most interesting enigmas.

In the 'teens of the last century, there were dozens of car companies. John North Willys, of Elmira, New York, bought the ailing Overland Company and formed the Willys-Overland Company. During that time, Willys-Overland was the second-best-selling car in America, behind Ford and its Model T. Unfortunately for Willys-Overland, it was all downhill from there.

Through the '20s and '30s, the company tried price points, from cheap, entry-level cars to large, expensive, upscale vehicles. Willys production peaked in '31 at around 65,000 cars, but by '34 the company went bankrupt. John Willys North died in '35 and his once - No. 2 car company was restructured in '37.

The '39 Overland model (illustrated above) accounted for 15,839 units of Willys total production of 17,839 cars. The "Speedway Special" had a lot going for it. Offered as a coupe or sedan, the car had a 62hp engine, hydraulic brakes, larger tires, headlights mounted in pods on top of the fenders, and had a 2-inch longer wheelbase - for only \$100 more than the base Willys, and \$32 less than the top selling '39 Chevy.

In '39, new president and general manager Joseph W. Frazer took over the company and had the Overland model restyled once again. Now called the "440" the car had Ford-like styling and sold for between \$634 and \$916. Unfortunately for Willys-Overland, sales never really took off. Then came WWII.

# 1940-41 WILLYS

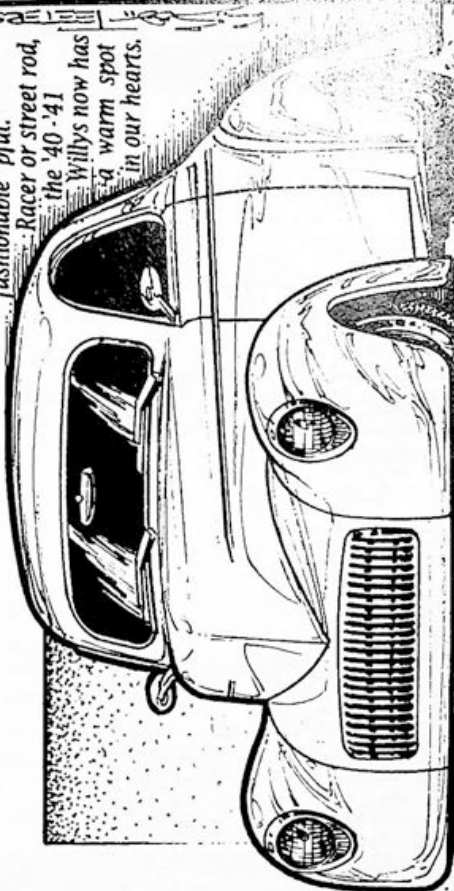
## "A Street Rod & Gasser Classic"

Working with the little Bantam Company (not even in the top 20 car makers of their day), Willys contracted with Uncle Sam to build Jeeps for the military. From 1940 to 1945 Willys made more than 360,000 Jeeps - nearly as many Jeeps as the company previously had made cars.

After the war, Willys tried several automobile offerings, but nothing ever captured the buying public's attention. Jeeps, were another story. From '46 to '65, Willys made more than 300,000 Jeeps for public and military use. However, it still wasn't enough. From '53 to '98 the Jeep brand was sold and bought four times and is now owned by Daimler-Chrysler. The pudgy Willys cars were eventually made in Brazil until '72, using the same early '50s design.

The '39 - '41 Willys popularity in drag racing and street rodding is something of a mystery. For a car that no one wanted new, they suddenly started showing up at drag strips all over the country as "Gassers." Names such as "Stone Woods & Cook," "Big John Mazmanian," and "K.S. Pittman" turned the unwanted Willys cars into heroes. The looks of the car are deceiving. They appear to be huge, when in fact that are rather small - using a 100- to 102-inch wheelbase (6 to 8 inches shorter than a Camaro). Street rod versions look very Ford-like and appeal to people who don't want to have "another" '32 Ford street rod. Racing versions always looked as if they were ready to lunge forward and street rod versions look fashionable "pfat."

Racer or street rod, the '40 - '41 Willys now has a warm spot in our hearts.



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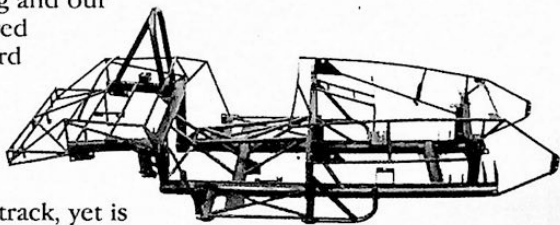


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